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S/N 09/191,577

PATENT



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: FREES ET AL.

Examiner:

Castro, A.

Serial No.: 09/191,577

Group Art Unit:

2652

Filed: 11/13/98

Docket No.:

SA998163

501.117US01

20  
Brief

Title: MOUNTING INTERFACE FOR A SPINDLE MOTOR

CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8

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Nov. 15, 2001.

David W. Lynch

Name

Signature

Box AF  
Assistant Commissioner for Patents  
Washington, D.C. 20231

- ☒ Appellant's Amended Brief On Appeal, with appendices, in triplicate
- ☒ Transmittal Sheet
- ☒ Return postcard

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Respectfully submitted,

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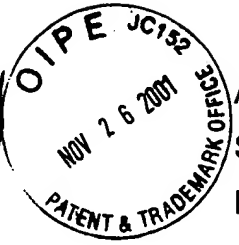
Date: Nov. 15, 2001

By:

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S/N 09/191,577

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NOV 15 2001  
David W. Lynch

Name

Signature

APPELLANT'S AMENDED BRIEF ON APPEAL

Box AF  
Assistant Commissioner for Patents  
Washington, D.C. 20231

Dear Sir:

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This amended Brief is presented in support of the Notice of Appeal filed May 4, 2001, from the final rejection of Claims 1-51 of the above-identified application, as set forth in the Office Action mailed January 4, 2001.

A check for \$310.00 to cover the required fee for filing this Brief is enclosed. An original and two copies of the Brief are enclosed herewith.

I. REAL PARTY OF INTEREST

The Real Party of Interest is International Business Machines Corporation, a corporation of New York and the assignee of the instant application.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences for the above-referenced patent application.

### **III. STATUS OF CLAIMS**

Claims 1-51 are pending and are the subject of this Appeal (Appendix 1, Claims). Claims 1-51 were finally rejected by the Examiner's action dated January 4, 2001. Appellant's appeal the Examiner's rejection of claims 1-51.

### **IV. STATUS OF AMENDMENTS**

An initial Office Action was mailed on July 6, 2001 (Appendix 2A). An Amendment in response to the initial Office Action was mailed on October 6, 2000 (Appendix 2B). A final Office Action was mailed on January 4, 2001 (Appendix 2C). An Amendment in response to the final Office Action was filed on March 28, 2001, under 37 C.F.R. § 1.116 (Appendix 2D). An Advisory Action mailed April 4, 2001 indicated that the response to the Office Action was entered into the record (Appendix 2E). An Interview Summary mailed April 19, 2001 indicates that the Examiner maintains that Kirkwood teaches the invention as claimed, therefore the position of record is maintained (Appendix 2F).

### **V. SUMMARY OF THE INVENTION**

The Appellant's invention relates to a spindle motors for disk drives, and more particularly to a mounting interface for a spindle motor (see at least Fig. 5 and Fig. 6). The mounting interface for a spindle motor allows the optimization of spindle dynamics. (page 12, lines 1-10). The mounting interface provides a steadfast relationship between a motor and a baseplate, wherein the mounting interface includes at least three surface points forming a single plane acting as a common boundary between the motor and the baseplate. (see Fig. 5, 512, 514, 516; Fig. 6, 620, 622, 624). The three surface points may be pads, and the pads may be coupled to the baseplate or to the mount flange. (page 10, lines 1-12). The three surface points provide reduced contact area between the mount flange and the baseplate, and the reduced contact area lowers the rigidity of the mount flange and the resonant frequencies. (page 11, lines 3-22). The surface area of

the pads and the material of the pads are chosen to reduce acoustical noise. (page 11, lines 6-15). In addition, a damping ring may be provided for dissipating distortion energy between the motor, baseplate and/or mount flange. (see Fig. 8, page 12, line 19 - page 13, line 13; Fig. 9, page 13 line 17 - page 14, line 4).

## **VI. ISSUES PRESENTED FOR REVIEW**

### **Issue 1:**

Whether the invention of claims 1-4, 6-8, 31, 33-34, 36-38, 46 is anticipated by Kirkwood under 35 U.S.C. 102(e).

In the Office Action of January 4, 2001, the Office Action indicates Kirkwood discloses a mounting interface for providing a steadfast relationship between a motor 22 and a baseplate 50, the mounting interface comprising at least three surface points 58 forming a single plane acting as a common boundary between the motor and the baseplate, the positions of the at least three surface points being selected to affect a vibrational characteristic of the motor.

### **Issue 2:**

Whether the invention of claims 5, 16-20, 21-23, 32 and 35 is unpatentable over Kirkwood under 35 U.S.C. 103(a).

According to the Office Action, with respect to claims 16-19 and 21-23, Kirkwood discloses a mounting interface described by Appellant. However, according to the Office Action, Kirkwood does not disclose the data storage system comprising a storage medium, an actuator and a spindle motor for rotating the storage medium. Nevertheless, according to the Office Action, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the mounting interface of Kirkwood into a data storage system comprising a storage medium, and an actuator and a spindle motor for rotating the storage medium. The rationale, according to the Office Action, is that one of ordinary skill in the art would have been motivated to incorporate the mounting interface of Kirkwood into a data storage system comprising a storage medium, an actuator and a spindle motor for rotating the storage medium as it would reduce the vibration of the spindle motor as well as

the acoustical noise.

According to the Office Action, with respect to claims 5, 20 and 35, Kirkwood does not disclose that the at least three surface points provides reduced contact area and lowering the resonant frequencies. However, according to the Office Action, Official Notice was taken that it was notoriously old and well known to lower the resonant frequencies by reducing the contact areas between the motor and the baseplate. Therefore, according to the Office Action, it would have been obvious to one of ordinary skill in the art at the time the invention was made to lower the resonant frequencies by reducing the contact areas between the motor and the baseplate. The motivation, according to the Office Action, is that by lowering the resonant frequencies, possible damage to the motor and a disk attached to it would be prevented.

According to the Office Action, with respect to claim 32, Kirkwood does not disclose forming the mounting interface on the baseplate. Nevertheless, according to the Office Action, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the mounting interface of Kirkwood on the baseplate. The rationale, according to the Office Action, is that one of ordinary skill in the art would have been motivated to provide the mounting interface of Kirkwood on the baseplate as it would simplify the mounting of the motor.

### **Issue 3:**

Whether the invention of claims 9-15, 24-30, 39-45 and 47-51 is unpatentable over Kirkwood in view of Merriman, Jr. under 35 U.S.C. 103(a).

According to the Office Action, with respect to claims 9-15, 24-30, 39-45 and 47-51, Kirkwood discloses a mounting interface described by Appellant. However, according to the Office Action, Kirkwood does not discloses a damping ring between the at least three surface points. Nevertheless, according to the Office Action, Merriman, Jr. discloses a motor vibration isolator with a mounting interface 10 comprising a damping ring 20, 22, with a portion 22-3 disposed perpendicular to the single plane on an outer surface of at least three points of the mounting interface and a seal 20. Thus, according to the Office Action, it

would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the mounting interface of Kirkwood with the damping ring and seal as taught by Merriman, Jr. The rationale, according to the Office Action, is that one of ordinary skill in the art would have been motivated to provide the mounting interface of Kirkwood with the damping ring and seal as taught by Merriman, Jr. as it would isolate the motor from the baseplate and provide a circular locating step.

## **VII. GROUPING OF CLAIMS**

For consideration on this appeal, Appellant submits that the claims can be grouped as follows:

- Group 1: Claims 1-4, 6 and 8;
- Group 2: Claim 5;
- Group 3: Claim 7;
- Group 4: Claims 9-11, 13, 14, 46-47, 49 and 50;
- Group 5: Claims 12, 15, 48 and 51;
- Group 6: Claims 16-21 and 23;
- Group 7: Claim 22;
- Group 8: Claims 24-26, 28 and 29;
- Group 9: Claims 27 and 30;
- Group 10: Claims 31, 33-36, 38 and 39;
- Group 11: Claim 32;
- Group 12: Claim 37;
- Group 13: Claims 40-44; and
- Group 14: Claim 45.

## **VIII. ARGUMENT**

### **A. Statement on Grouping of Claims**

Appellant has grouped rejected claims 1-51 into Groups 1-14, as specified above. The claims of one Group do not stand or fall with the claims of another Group.

The Group 1 claims are directed to a mounting interface for providing a steadfast relationship between a motor and a baseplate, wherein the mounting interface includes at least three surface points forming a single plane acting as a common boundary between the motor and the baseplate. Further, the positions of the at least three surface points being selected to affect a vibrational characteristics of the motor.

The Group 2 claim includes the features of claim 1 of Group 1, and further defines a distinguishing feature of providing a reduced contact area between the mount flange and the baseplate, the reduced contact area lowering rigidity of the mount flange and lowering resonant frequencies that is neither taught nor suggested in the Prior Art.

The Group 3 claim includes the features of claim 1 of Group 1, and further defines a distinguishing feature that the at least three surface points are formed using a predetermined material, the predetermined material being chosen to reduce acoustical noise that is neither taught or suggested in the Prior Art.

The Group 4 claims include the features of claim 1 of Group 1 or of claim 46, and further define a distinguishing feature of providing a damping ring disposed on an inner side and between the at least three surface points for dissipating distortion energy that is neither taught nor suggested in the Prior Art.

The Group 5 claims include the features of claim 1 of Group 1 or of claim 46, and further define a distinguishing feature of a seal disposed on the portion on the outer surface of the at least three surface points of the mounting interface, the seal forming a barrier in a gap between the mount flange and the baseplate that is neither taught nor suggested in the Prior Art.

The Group 6 claims are directed to a data storage system including, a storage medium, an actuator, an actuator motor, a spindle motor, and a mounting interface that is neither taught nor suggested in the Prior Art.

The Group 7 claim includes the features of claim 16 of Group 6, and further defines a distinguishing feature that the at least three surface points are formed using a predetermined material, the predetermined material being chosen to reduce acoustical noise that is neither taught nor suggested in the Prior Art.

The Group 8 claims include the features of claim 16 of Group 6, and further define a distinguishing feature of providing a damping ring disposed on an inner side and between the at least three surface points for dissipating distortion energy that is neither taught nor suggested in the Prior Art.

The Group 9 claims include the features of claim 16 of Group 6, and further define a distinguishing feature of a seal disposed on the portion on the outer surface of the at least three surface points of the mounting interface, the seal forming a barrier in a gap between the mount flange and the baseplate that is neither taught nor suggested in the Prior Art.

The Group 10 claims are directed to a method for reducing acoustic dynamics of a spindle motor, including forming a mounting interface between a spindle motor and a baseplate, wherein the mounting interface includes at least three surface points forming a single plane acting as a common boundary between the spindle motor and the baseplate. Further, the positions of the at least three surface points being selected to affect a vibrational characteristic of the motor that is neither taught nor suggested in the Prior Art.

The Group 11 claim includes the features of claim 31 of Group 10, and further defines a distinguishing feature of forming a mounting interface on the baseplate that is neither taught nor suggested in the Prior Art.

The Group 12 claim includes the features of claim 31 of Group 10, and further defines a distinguishing feature that the at least three surface points are formed using a predetermined material, the predetermined material being chosen to reduce acoustical noise that is neither taught nor suggested in the Prior Art.

The Group 13 claims include the features of claim 31 of Group 10, and further define a distinguishing feature of providing a damping ring disposed on an inner side and between the at least three surface points for dissipating distortion energy that is neither taught nor suggested in the Prior Art.



The Group 14 claim includes the features of claim 31 of Group 10, and further defines a distinguishing feature of a seal disposed on the portion on the outer surface of the at least three surface points of the mounting interface, the seal forming a barrier in a gap between the mount flange and the baseplate that is neither taught nor suggested in the Prior Art.

In view of the differences in scope and focus with respect to the claims of Groups 1-14, Appellant respectfully asserts that these Groups of claims should be reviewed by the Board as separately patentable inventions for purposes of this Appeal.

**B. Issue 1**

**APPELLANT'S INVENTION, AS RECITED IN CLAIMS 1-4, 6-8, 31, 33-34, 36-38, 46, IS NOT ANTICIPATED UNDER 35 U.S.C. §102(e) BY KIRKWOOD.**

- 1. KIRKWOOD DOES NOT DISCLOSE, EXPRESSLY OR INHERENTLY, A MOUNTING INTERFACE WHEREIN THE POSITIONS OF THE AT LEAST THREE SURFACE POINTS ARE SELECTED TO AFFECT A VIBRATIONAL CHARACTERISTIC OF THE MOTOR AS RECITED IN CLAIMS 1-4, 6 AND 8.**

Appellant's invention is directed to mounting an interface between a disk drive spindle motor and the drive baseplate, which enables optimization of spindle dynamics. This is achieved by providing a means to shift resonant frequencies to a desired location and by providing a more repeatable boundary condition for the spindle motor.

According to Appellant's invention, as recited in claims 1-4, 6 and 8 of Group 1, the mounting interface provided between a motor and a baseplate includes at least three surface points that act as a boundary between the motor and the baseplate. The positioning of the at least three surfaces is selected to affect a vibrational characteristic of the motor. For example, the surface points are positioned to provide reduced contact area between a mount flange of the motor and the baseplate, thus, the reduced contact area lowers the rigidity of the mount

flange and lowers resonant frequencies. Additionally, the surface area of the surface points and material used to form the surface points are selected to reduce acoustical noise.

In contrast to Appellant's invention, Kirkwood merely discloses that a motor isolating assembly 53 has an upper motor cover 54. Further, the upper motor cover has a "plurality of protrusions . . . [that] are located proximate fastener 32" and also that the "protrusions are distributed over the exterior drive shaft side of [the] motor cover." (See column 4, lines 3-4 and lines 51-57).

Kirkwood does not teach, expressly or inherently, that the position of the protrusions (surface points) is selected for the purpose of affecting the vibrational characteristics of the motor. Therefore, Appellant respectfully submits that claims 1-4, 6 and 8 are patentable over Kirkwood.

**2. KIRKWOOD DOES NOT DISCLOSE, EXPRESSLY OR INHERENTLY, A METHOD FOR REDUCING ACOUSTIC DYNAMICS OF A SPINDLE MOTOR, COMPRISING FORMING A MOUNTING INTERFACE BETWEEN A SPINDLE MOTOR AND A BASEPLATE, THE MOUNTING INTERFACE COMPRISING AT LEAST THREE SURFACE POINTS FORMING A SINGLE PLANE ACTING AS A COMMON BOUNDARY BETWEEN THE SPINDLE MOTOR AND THE BASEPLATE, POSITIONS OF THE AT LEAST THREE SURFACE POINTS BEING SELECTED TO AFFECT A VIBRATIONAL CHARACTERISTIC OF THE MOTOR AS RECITED IN CLAIMS 31, 33-36, 38 AND 39.**

According to Appellant's invention, as recited in claims 31, 33-36, 38 and 39 of Group 10, the invention includes a method of reducing acoustic dynamics of a spindle motor, including forming a mounting interface between a spindle motor and a baseplate, the mounting interface including at least three surface points forming a single plane acting as a common boundary between the spindle motor and the baseplate. Further, in Appellant's invention, the positions of the at least three surface points are selected to affect a vibrational characteristic of the motor. For example, the surface points are formed to provide reduced contact area

between a mount flange of the motor and the baseplate, thus, the reduced contact area lowers the rigidity of the mount flange and lowers resonant frequencies. Additionally, the surface area of the surface points and material used to form the surface points are selected to reduce acoustical noise.

Kirkwood, as discussed in the previous section, does not suggest forming a mounting interface, wherein the position of the protrusions (surface points) is selected to affect the vibrational characteristics of the motor. Therefore, Appellant respectfully submits that claims 31, 33-36, 38 and 39 are patentable over Kirkwood.

**3. KIRKWOOD DOES NOT DISCLOSE, EXPRESSLY OR INHERENTLY, THAT AT LEAST THREE SURFACE POINTS ARE FORMED USING A PREDETERMINED MATERIAL, THE PREDETERMINED MATERIAL BEING CHOSEN TO REDUCE ACOUSTICAL NOISE AS RECITED IN CLAIM 37.**

According to Appellant's invention, as recited in claim 37 of Group 12, the at least three surface points are formed using a predetermined material, the predetermined material being chosen to reduce acoustical noise. Thus, the material selected for the surface points is one parameter that allows optimization of a desired frequency shift.

Kirkwood does not disclose that a predetermined material is chosen for the protrusions to reduce acoustical noise. Rather, Kirkwood merely discloses that the isolator, upper motor cover and lower motor cover are made of a flexible material, such as rubber or a like synthetic material. However, Kirkwood does not disclose that the protrusions that are "distributed over the exterior drive shaft side of the upper motor cover" are chosen to reduce acoustical noise. (See column 4, lines 3-4 and lines 51-57).

Thus, Kirkwood does not disclose that the surface points are formed using a predetermined material, wherein the predetermined material is chosen to

reduce acoustical noise. Therefore, Appellant respectfully submits that claim 37 is patentable over Kirkwood.

4. **KIRKWOOD DOES NOT DISCLOSE, EXPRESSLY OR INHERENTLY, A MOUNTING INTERFACE COMPRISING A DAMPING RING DISPOSED ON THE INNER SIDE AND BETWEEN AT LEAST THREE SURFACE POINTS, THE DAMPING RING DISSIPATING DISTORTION ENERGY, POSITIONS OF THE AT LEAST THREE SURFACE POINTS BEING SELECTED SO AS TO AFFECT A VIBRATIONAL CHARACTERISTIC OF THE MOTOR AS RECITED IN CLAIMS 46.**

As admitted by the Examiner in paragraph 5 on page 4 of the final Office Action, Kirkwood does not disclose a damping ring between the at least three surface points. This feature is neither expressly disclosed or inherently taught by Kirkwood.

Therefore, claim 46 is patentable over Kirkwood.

## **Issue 2:**

1. **CLAIMS 5, 16-20, 21-23, 32 AND 35 ARE PATENTABLE OVER KIRKWOOD.**

To establish a *prima facie* case of obviousness, three basic criteria must be met:

- 1) There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings;
- 2) there must be a reasonable expectation of success; and
- 3) the prior art reference (or references when combined) must teach or suggest all the claim limitations.  
(M.P.E.P. §2142).

Appellant respectfully submits that Kirkwood fails to suggest all the claim limitations with respect to at least claims 5, 16-20, 21-23, 32 and 35. Appellant respectfully submits that the Examiner bears the burden of establishing a prima facie case of obviousness based upon the prior art. The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. In re Gordon, 733 F.2d at 902, 221 USPQ at 1127.

In particular, the Examiner concludes, without reliance on a supporting reference, that to lower the resonant frequencies by reducing the contact areas between motor and the baseplate is "well known" in the arts. Appellant respectfully asserts that a mounting interface including at least three surface points forming a single plane acting as a common boundary between the motor and the baseplate, wherein positions of the at least three surface points being selected to affect a vibrational characteristic of the motor do not constitute facts outside of the record which are capable of instant and unquestionable demonstration as being "well-known" in the art. The references relied on by the Examiner, for example, fail to disclose this purportedly "well known" fact. Appellant contends that reasonable doubt exists regarding the circumstances justifying the Examiner's exercise of official notice, and requests that the Examiner provide evidence that demonstrates the appropriateness of the officially noticed facts pursuant to MPEP § 2144.03. Appellant reserves the opportunity to respond to the Examiner's comments concerning any such judicially noticed facts.

In determining the differences between the prior art and the claims, the question under 35 U.S.C. § 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. Taking official notice of the above-discussed "facts" disregards the requirement of analyzing Appellant's claimed subject matter "as a whole." Appellant respectfully reiterates the legal tenet that facts so noticed should not comprise the principle evidence upon which a rejection is based. MPEP § 2144.03.

Because several features of Appellant's invention are neither taught nor suggested by the asserted combination, and because supplying the missing features by exercise of official notice is inappropriate, Appellant's claims 5, 16-20, 21-23, 32 and 35 are believed to be patentable over Kirkwood and Merriman.

According to Appellant's invention, as recited in claim 5 of Group 2, the at least three surface points provide reduced contact area between the mount flange and the baseplate, the reduced contact area lowering rigidity of the mount flange and lowering resonant frequencies. For example, the selection of the position of the surface points changes the spindle motor boundary conditions to lower the dynamic rigidity of the mount flange. This results in lower resonant frequencies for troublesome vibration modes. Thus, by shifting the resonant frequency in this manner, interaction between resonant frequency and excitation frequency of the motor can be avoided to improve acoustics and track following performance. The surface points (e.g., mount pads) provide a frequency reduction of approximately 80 Hz, for example. However, those skilled in the art will recognize that the invention is not meant to be limited to a particular embodiment, but that the size of the mount pads and the material selected for the mount pads are parameters that allow optimization of the desired frequency shift.

In contrast to Appellant's invention, Kirkwood merely discloses an upper motor cover, wherein the upper motor cover has a plurality of protrusions. Nowhere does Kirkwood suggest that the position of the surface points are selected to affect the vibrational characteristics of the motor, such as by lowering rigidity of the mount flange and lowering resonant frequencies. Therefore, Appellant respectfully submits that claim 5 is patentable over Kirkwood.

As admitted by the Examiner in paragraph 4 on page 3 of the final Office Action, Kirkwood does not disclose the data storage system comprising a storage medium, an actuator, a spindle motor for rotating the storage medium and a mounting interface of the type presented in the claims. However, according to the Office Action, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the mounting interface of Kirkwood into a data storage system comprising a storage medium and an actuator and a spindle motor for rotating the storage medium.

As previously stated, the mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. In re Gordon, 733 F.2d at 902, 221 USPQ at 1127.

In view of the above remarks, claims 16-21 and 23 of Group 6 are patentable over Kirkwood.

According to Appellant's invention, as recited in claim 22 of Group 7, in the data storage device at least three surface points are formed using a predetermined material, the predetermined material being chosen to reduce acoustical noise. Thus, the material selected for the mount pads is one parameter that allows optimization of a desired frequency shift.

Kirkwood, as discussed previously, does not disclose that a predetermined material is chosen for the protrusions to reduce acoustical noise, and merely discloses that the isolator, upper motor cover and lower motor cover are made of a flexible material, such as rubber or a like synthetic material. Thus, Kirkwood does not suggest that the surface points are formed using a predetermined material, wherein the predetermined material is chosen to reduce acoustical noise. Therefore, Appellant respectfully submits that claim 22 is patentable over Kirkwood.

According to Appellant's invention, as recited in claim 32 of Group 11, the forming of a mounting interface between a spindle motor and a baseplate further comprises forming the mounting interface on the baseplate.

Appellant reiterates that Kirkwood discloses "protrusions are distributed over the exterior drive shaft side of [a] motor cover" to produce a reduction in surface area and thus provide a reduction in the transmission of motor vibration. (See column 4, lines 3-4 and lines 51-57). Thus, in Kirkwood, the protrusions are disposed on the motor cover that is located between the motor and the frame. Kirkwood does not even consider forming the mounting interface on the baseplate (frame).

Therefore, Appellant respectfully submits that claim 32 is patentable over Kirkwood.

Claim 35 of Group 10 is patentable over Kirkwood for reasons similar to those articulated in paragraph 2 of Issue 2 with respect to claim 5 of Group 2. Appellant respectfully submits that Kirkwood does not disclose, teach or suggest all of the claimed limitations of Appellant's claim 35. Moreover, Kirkwood fails to provide the requisite suggestions of motivation that would lead one skilled in the art to arrive at Appellant's invention of claim 35.

Therefore, Appellant respectfully submits that claim 35 is patentable over Kirkwood.

**Issue 3:**

**APPELLANT'S INVENTION, AS RECITED IN CLAIMS 9-15, 24-30, 39-45 AND 47-51, IS PATENTABLE OVER KIRKWOOD AND MERRIMAN, JR.**

**1. THE REFERENCES DO NOT PROVIDE A BASIS FOR THE COMBINATION OF REFERENCES.**

Appellant respectfully submits that the references are not properly combinable. Appellant contends that a *prima facie* case of obviousness has not been established, as described more fully below. To establish a *prima facie* case of obviousness, there must be some actual *motivation* to combine the Kirkwood and the Merriman reference found in the references themselves, the knowledge of one of ordinary skill in the art or from the nature of the problem to be solved that would suggest the combination. Without a suggestion of the desirability of "the combination," a combination of such references is made in hindsight, and the "range of sources available, however, does not diminish the requirement for actual evidence." *In re Dembiczak*, 50 USPQ2d 1614 (Fed. Cir. 1999). It is a requirement that actual evidence of a suggestion, teaching or motivation to combine prior art references be shown, and that this evidence be "clear and particular." *Id.* Broad conclusory statements regarding the teaching of multiple references, standing alone, are not evidence. *Id.*

It is respectfully submitted that Kirkwood fails to provide any suggestion to implement or otherwise be combined with a device that provides a circular step



insert which mounts on an isolation member located between a stepping motor and a frame, and Merriman fails to provide any suggestion to implement or otherwise be combined with a device that provides a reduction in motor vibration by using protrusions to reduce the surface area between a motor and a mounting flange. Appellant thus respectfully contends that a *prima facie* case of obviousness has not been established as no “clear and particular” evidence of motivation to combine can be identified.

More particularly, the Examiner noted that Kirkwood “does not disclose a damping ring between the at least three surface points.” The Appellant agrees with the Examiner that Kirkwood does not teach a damping ring, and Kirkwood cannot therefore reasonably be said to provide a teaching or suggestion to any damping ring between the at least three surfaces, much less, an insert (circular damping ring) that mounts between a step motor and a mounting flange without reducing surface area contact between surfaces.

Further, in discussing a combination of Kirkwood and Merriman, the Examiner states that it would have been obvious to provide the mounting interface of Kirkwood with the damping ring and seal taught by Merriman because “it isolate[s] the motor from the baseplate and provides a circular locating step.” In other words, the need to “isolate the motor from the baseplate and provide a circular locating step” is what Merriman teaches is the benefit of the Merriman invention itself (according to the Examiner), and not a motivation to combine with Kirkwood. The examiner must show some objective teaching leading to the combination. *In re Fine*, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988). It is respectfully submitted that there is no such objective teaching in Merriman that leads “to the combination” of Kirkwood and Merriman, and the Examiner has pieced together aspects purportedly found in the prior art to arrive at the invention through hindsight reconstruction. As stated by the Federal Circuit:

**“Combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor’s disclosure as a blueprint for piecing together the prior art to defeat patentability--the essence of hindsight.”**

*In re Dembiczak*, 50 USPQ2d 1614, (Fed. Cir. 1999) (citing *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1138, 227 USPQ 543, 547 (Fed. Cir. 1985); emphasis added).

Therefore, Appellant's claims are believed to be patentable over Kirkwood and Merriman.

Appellant submits that due to certain troublesome vibration modes of the spindle motor, elastic deformation of the mount flange may occur that entails transverse bending of the mount flange between any two of the at least three pads. The damping ring acts as a constrained layer damper by being sandwiched between the baseplate and the motor mount flange.

According to Appellant's invention, as recited in claims 9-11, 13-14 and 47-50 of Group 4, claims 24-36 and 28-29 of Group 8, claim 39 of Group 10, and claims 40-44 of Group 13, a damping ring is provided to dissipate distortion energy caused by the vibration of the mount flange. Further, in Appellant's invention, the damping ring further comprises forming a portion perpendicular to the single plane on an outer surface of the at least three surface points of the mounting interface, the portion engaging with the baseplate to dissipate energy resulting from sheer distortion between the baseplate and the at least three surface points. Accordingly, the damping ring surrounds a mount pad (surface point) on three sides. For example, an inner, vertical portion of the damping ring rests against the back of the mount pad. Further, the damping ring actually extends slightly below the plane of the bottom of the mount pad so that the damping ring contacts the baseplate and is slightly compressed when the motor is installed. However, for example, the damping ring does not reside between the mount pad and the baseplate. Thus, the geometric location and stability of the motor and mount flange is not affected by the damping ring, i.e., there is still solid metal-to-metal contact between the motor/mount flange and the baseplate.

In contrast to Appellant's invention, as admitted in the final Office Action dated 4 January 2001, Kirkwood does not disclose a damping ring between the at least three surface points.

Merriman fails to remedy the deficiencies of Kirkwood. Merriman fails to disclose at least a damping ring with a portion disposed perpendicular to the single plane on an outer surface of the at least three surface points of the mounting interface, the portion engaging with the baseplate to dissipate energy resulting from sheer distortion between the baseplate and the at least three surface points.

Rather, Merriman merely discloses a circular step insert, which mounts on an isolation member, the isolation member located between a stepping motor and a frame. At best, Merriman teaches a circular ring that contacts at most two surfaces of an isolation member.

Therefore, claims 9-11, 13-14, 47-50, 24-36, 28-29, 39 and 40-44 are patentable over Kirkwood and Merriman.

According to Appellant's invention, as recited in claims 12, 15, 48 and 51 of Group 5, 27 and 30 of Group 9, and claim 45 of Group 14, the damping ring further comprises a seal disposed on the portion on the outer surface of the at least three surface points of the mounting interface, the seal forming a barrier in a gap between the mount flange and the baseplate.

In contrast to Appellant's invention, as admitted in the final Office Action dated 4 January 2001, Kirkwood does not disclose a seal.

Merriman fails to remedy the deficiencies of Kirkwood. Merriman fails to disclose at least a seal forming a barrier in a gap between the mount flange and the baseplate. Moreover, Merriman does not even mention a seal. At best, Merriman discloses a circular step insert that is located between an isolation member and a frame, not a mount flange and a baseplate as recited in Appellant's claims.

Therefore, claims 12, 15, 27, 30, 45, 48 and 51 are patentable over Kirkwood and Merriman.

**SUMMARY**

For the foregoing reasons, it is submitted that the Examiner's rejections of the claims are erroneous. Reversal of these rejections is respectfully requested, and allowance of all of the pending claims is requested.

Respectfully submitted,

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Date:

Nov. 15, 2007

By:



David W. Lynch  
Reg. No. 36,204

DWL/tmj

**APPENDIX 1**  
**THE CLAIMS ON APPEAL**

1           1.     A mounting interface for providing a steadfast relationship between  
2     a motor and a baseplate, the mounting interface comprising at least three surface  
3     points forming a single plane acting as a common boundary between the motor  
4     and the baseplate, positions of the at least three surface points being selected to  
5     affect a vibrational characteristic of the motor.

1           2.     The mounting interface of claim 1 wherein the at least three surface  
2     points further comprise pads.

1           3.     The mounting interface of claim 1 wherein the at least three surface  
2     points are coupled to the baseplate.

1           4.     The mounting interface of claim 1 wherein the motor includes a  
2     mount flange, wherein the at least three surface points are coupled to the mount  
3     flange.

1           5.     The mounting interface of claim 1 wherein the motor includes a  
2     mount flange and wherein the at least three surface points provide reduced  
3     contact area between the mount flange and the baseplate, the reduced contact  
4     area lowering rigidity of the mount flange and lowering resonant frequencies.

1           6.     The mounting interface of claim 1 wherein the at least three surface  
2     points have a surface area, the surface area being chosen to reduce acoustical  
3     noise.

1           7.     The mounting interface of claim 1 wherein the at least three surface  
2 points are formed using a predetermined material, the predetermined material  
3 being chosen to reduce acoustical noise.

1           8.     The mounting interface of claim 1 wherein the at least three surface  
2 points are positioned at predetermined radial angles therebetween, the  
3 predetermined radial angles being chosen to reduce acoustical noise.

1           9.     The mounting interface of claim 1 further comprising a damping ring  
2 disposed on an inner side and between the at least three surface points for  
3 dissipating distortion energy.

1           10.    The mounting interface of claim 9 wherein the motor includes a  
2 mount flange and wherein the damping ring is coupled to the mount flange.

1           11.    The mounting interface of claim 10 wherein the damping ring  
2 further comprises a portion disposed perpendicular to the single plane on an  
3 outer surface of the at least three surface points of the mounting interface, the  
4 portion engaging with the baseplate to dissipate energy resulting from sheer  
5 distortion between the baseplate and the at least three surface points.

1           12.    The mounting interface of claim 11 wherein the damping ring  
2 further comprises a seal disposed on the portion on the outer surface of the at  
3 least three surface points of the mounting interface, the seal forming a barrier in  
4 a gap between the mount flange and the baseplate.

1           13.    The mounting interface of claim 9 wherein the damping ring is  
2 coupled to the baseplate.

1           14.    The mounting interface of claim 13 wherein the damping ring  
2 further comprises a portion disposed perpendicular to the single plane on an  
3 outer surface of the at least three surface points of the mounting interface, the  
4 portion engaging with the baseplate and the at least three surface points to  
5 dissipate energy resulting from sheer distortion between the baseplate and the at  
6 least three surface points.

1           15.    The mounting interface of claim 14 wherein the damping ring  
2 further comprises a seal disposed on the portion on the outer surface of the at  
3 least three surface points of the mounting interface, the seal forming a barrier in  
4 a gap between the motor and the baseplate.

1           16.    A data storage system, comprising:  
2           a storage medium;  
3           an actuator including a transducer disposed at a distal end of an actuator  
4 arm;  
5           an actuator motor, coupled to the actuator, for moving the transducer  
6 relative to the storage medium;  
7           a baseplate;  
8           a spindle motor for rotating the storage medium;  
9           a mount flange, coupled to the spindle motor, for coupling the spindle  
10 motor to the baseplate; and  
11          a mounting interface disposed between the mount flange and the  
12 baseplate, the mounting interface comprising at least three surface points  
13 forming a single plane acting as a common boundary between the mount flange  
14 and the baseplate, positions of the at least three surface points being selected to  
15 affect a vibrational characteristic of the spindle motor.

1           17.    The data storage system of claim 16 wherein the at least three  
2 surface points further comprise pads.

1           18.    The data storage system of claim 16 wherein the at least three  
2 surface points are coupled to the baseplate.

1           19.    The data storage system of claim 16 wherein the at least three  
2 surface points are coupled to the mount flange.

1           20.    The data storage system of claim 16 wherein the at least three  
2 surface points provide reduced contact area between the mount flange and the  
3 baseplate, the reduced contact area lowering rigidity of the mount flange and  
4 lowering resonant frequencies.

1           21.    The data storage system of claim 16 wherein the at least three  
2 surface points have a surface area, the surface area being chosen to reduce  
3 acoustical noise.

1           22.    The data storage system of claim 16 wherein the at least three  
2 surface points are formed using a predetermined material, the predetermined  
3 material being chosen to reduce acoustical noise.

1           23.    The data storage system of claim 16 wherein the at least three  
2 surface points are positioned at predetermined radial angles therebetween, the  
3 predetermined radial angles being chosen to reduce acoustical noise.

1           24.    The data storage system of claim 16 further comprising a damping  
2 ring disposed on an inner side and between the at least three surface points for  
3 dissipating distortion energy.

1           25.    The data storage system of claim 24 wherein the damping ring is  
2 coupled to the mount flange.



1           26.    The data storage system of claim 25 wherein the damping ring  
2 further comprises a portion disposed perpendicular to the single plane on an  
3 outer surface of the at least three surface points of the mounting interface, the  
4 portion engaging with the baseplate to dissipate energy resulting from sheer  
5 distortion between the baseplate and the at least three surface points.

1           27.    The data storage system of claim 26 wherein the damping ring  
2 further comprises a seal disposed on the portion on the outer surface of the at  
3 least three surface points of the mounting interface, the seal forming a barrier in  
4 a gap between the mount flange and the baseplate.

1           28.    The data storage system of claim 24 wherein the damping ring is  
2 coupled to the baseplate.

1           29.    The data storage system of claim 28 wherein the damping ring  
2 further comprises a portion disposed perpendicular to the single plane on an  
3 outer surface of the at least three surface points of the mounting interface, the  
4 portion engaging with the baseplate and the at least three surface points to  
5 dissipate energy resulting from sheer distortion between the baseplate and the at  
6 least three surface points.

1           30.    The data storage system of claim 29 wherein the damping ring  
2 further comprises a seal disposed on the portion on the outer surface of the at  
3 least three surface points of the mounting interface, the seal forming a barrier in  
4 a gap between the motor and the baseplate.

1           31.    A method for reducing acoustic dynamics of a spindle motor,  
2 comprising forming a mounting interface between a spindle motor and a  
3 baseplate, the mounting interface comprising at least three surface points  
4 forming a single plane acting as a common boundary between the spindle motor  
5 and the baseplate, positions of the at least three surface points being selected to  
6 affect a vibrational characteristic of the motor.

1           32.    The method of claim 31 wherein the forming a mounting interface  
2   between a spindle motor and a baseplate further comprises forming the mounting  
3   interface on the baseplate.

1           33.    The method of claim 31 wherein the forming a mounting interface  
2   between a spindle motor and a baseplate further comprises forming the mounting  
3   interface on a mount flange and coupling the mount flange to the spindle motor.

1           34.    The method of claim 31 wherein the forming a mounting interface  
2   further comprises forming at least three surface pads.

1           35.    The method of claim 31 wherein the forming a mounting interface  
2   further comprises reducing the contact area between a mount flange of the  
3   spindle motor and the baseplate, the reduced contact area lowering resonant  
4   frequencies.

1           36.    The method of claim 31 wherein the forming a mounting interface  
2   further comprises forming at least three surface points having a surface area, the  
3   surface area being chosen to reduce acoustical noise.

1           37.    The method of claim 31 wherein the forming a mounting interface  
2   further comprises forming at least three surface points using a predetermined  
3   material, the predetermined material being chosen to reduce acoustical noise.

1           38.    The method of claim 31 wherein the forming a mounting interface  
2   further comprises forming at least three surface points with a predetermined  
3   radial angle between each of the at least three surface points, the predetermined  
4   radial angles being chosen to reduce acoustical noise.

1           39.    The method of claim 31 further comprising forming a damping ring  
2   on an inner side and between the at least three surface points for dissipating  
3   distortion energy.

1           40.    The method of claim 39 wherein the forming a mounting interface  
2   between a spindle motor and a baseplate further comprises forming the mounting  
3   interface on a mount flange and wherein the damping ring is coupled to the  
4   mount flange.

1           41.    The method of claim 40 wherein the forming of the damping ring  
2   further comprises forming a portion perpendicular to the single plane on an outer  
3   surface of the at least three surface points of the mounting interface, the portion  
4   engaging with the baseplate to dissipate energy resulting from sheer distortion  
5   between the baseplate and the at least three surface points.

1           42.    (amended) The method of claim 41 wherein the forming of the  
2   damping ring further comprises forming a seal on the portion at the outer surface  
3   of the at least three surface points of the mounting interface, the seal forming a  
4   barrier in a gap between the mount flange and the baseplate.

1           43.    The method of claim 39 wherein the damping ring is coupled to the  
2   baseplate.

1           44.    The method of claim 43 wherein the forming of the damping ring  
2   further comprises forming a portion perpendicular to the single plane on an outer  
3   surface of the at least three surface points of the mounting interface, the portion  
4   engaging with the baseplate and the at least three surface points to dissipate  
5   energy resulting from sheer distortion between the baseplate and the at least  
6   three surface points.

1           45.    The method of claim 44 wherein the forming of the damping ring  
2   further comprises forming a seal on the portion at the outer surface of the at least  
3   three surface points of the mounting interface, the seal forming a barrier in a gap  
4   between the motor and the baseplate.

1           46.    A mounting interface for providing a steadfast relationship between  
2 a motor and a baseplate, the mounting interface comprising a damping ring  
3 disposed on an inner side and between at least three surface points, the  
4 damping ring dissipating distortion energy, positions of the at least three surface  
5 points being selected so as to affect a vibrational characteristic of the motor.

1           47.    The mounting interface of claim 46 wherein the damping ring  
2 further comprises a portion disposed on an outer surface of the at least three  
3 surface points of the mounting interface, the portion engaging with the baseplate  
4 to dissipate energy resulting from sheer distortion between the baseplate and the  
5 at least three surface points.

1           48.    The mounting interface of claim 47 wherein the damping ring  
2 further comprises a seal disposed on the portion on the outer surface of the at  
3 least three surface points of the mounting interface, the seal forming a barrier in  
4 a gap between the mount flange and the baseplate.

1           49.    The mounting interface of claim 46 wherein the damping ring is  
2 coupled to the baseplate.

1           50.    The mounting interface of claim 49 wherein the damping ring  
2 further comprises a portion disposed on an outer surface of the at least three  
3 surface points of the mounting interface, the portion engaging with the baseplate  
4 and the at least three surface points to dissipate energy resulting from sheer  
5 distortion between the baseplate and the at least three surface points.

1           51.    The mounting interface of claim 50 wherein the damping ring  
2 further comprises a seal disposed on the portion on the outer surface of the at  
3 least three surface points of the mounting interface, the seal forming a barrier in  
4 a gap between the motor and the baseplate.

**APPENDIX 2**

**OFFICE ACTIONS AND AMENDMENTS/RESPONSES**

- A. Office Action mailed July 6, 2000
- B. Amendment mailed October 6, 2000
- C. Final Office Action mailed January 4, 2001
- D. Amendment mailed March 28, 2001
- E. Advisory Action mailed April 4, 2001
- F. Interview Summary mailed April 19, 2001

# Appendix A



UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

501.117-US-01

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/191,577 11/13/98 FREES

G SA998163/305

LMCI/0708

David W. Lynch  
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10749 Bren Road East, Opus 2  
MINNEAPOLIS MN 55343-4131

EXAMINER

CASTRO, A

ART UNIT

PAPER NUMBER

2754

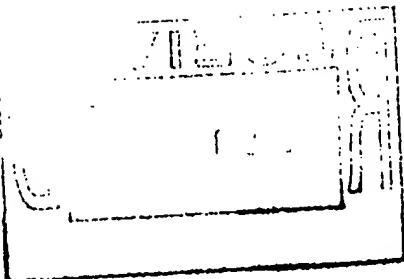
7

DATE MAILED: 07/06/00

3 month Resp 06 OCT 00  
6 month Resp 06 JAN 01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks



5511

# Office Action Summary

Application No.  
09/191,577

Applicant(s)  
Gregory M. FREES et al

Examiner  
Angel Castro

Group Art Unit  
2754

☒ Responsive to communication(s) filed on Nov 13, 1998

☐ This action is FINAL.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 1-51 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1-51 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 4, 6

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---



Art Unit: 2754

## DETAILED ACTION

### *Drawings*

1. Figure 4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

### *Claim Objections*

2. Claims 8, 23, 38 are objected to because of the following informalities: in claim 8, line 2, --radial-- should be inserted after "predetermined"; in claim 23, line 2, --radial-- should be inserted after "predetermined"; in claim 38, line 3, --radial-- should be inserted after "predetermined". Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 5, 11-12, 14-15, 20, 26-27, 29-30, 35, 41-45, 47-48, 50-51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear from the claims 42-45 to which step of the method they refer to. As per claims 11-12, 14-15, 26-27,

Art Unit: 2754

29-30, 41-42, 44-45, 47-48, 50-51, it is not clear how a vertical portion of the damping ring can be disposed since it is not stated that the plane formed by the three surface points is a horizontal plane.

5. Claim 5 recites the limitation "the resonant frequencies" in line 4. There is insufficient antecedent basis for this limitation in the claim.

6. Claim 20 recites the limitation "the resonant frequencies" in lines 3-4. There is insufficient antecedent basis for this limitation in the claim.

7. Claim 35 recites the limitation "the mount flange" in line 2. There is insufficient antecedent basis for this limitation in the claim.

8. Claim 35 recites the limitation "the resonant frequencies" in line 3. There is insufficient antecedent basis for this limitation in the claim.

*Claim Rejections - 35 USC § 102*

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-2, 4-8, 31, 33-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Mayumi et al (U.S. Pat. 4,806,811).

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As per claims 1-2, 4-8, 31, 33-38, Mayumi et al discloses a mounting interface (figures 1, 2A-2C) for providing a steadfast relationship between a motor and a baseplate (it is inherent that the motor is mounted on a base plate), the mounting interface comprising at least three surface points 3 forming a single plane acting as a common boundary between the motor and the baseplate.

*Claim Rejections - 35 USC § 103*

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 3, 9-15, 32, 39-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mayumi et al (U.S. Pat. 4,806,811).

As per claims 9-15, 39-51, Mayumi et al discloses a mounting interface described supra. Mayumi et al does not disclose a damping ring. Official Notice was given that it was notoriously old and well known in the art to provide a damping ring to dissipate distortion energy. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the mounting interface of Mayumi et al with the damping ring. The motivation would have been: it was well known that the provision of a damping ring between

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the motor and the baseplate would reduce the transmitted vibrations produced during the operation of the motor.

As per claims 3 and 32, Mayumi et al discloses at least three surface points coupled to the motor. Mayumi et al does not show the at least three surface points coupled to the baseplate. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the mounting interface of Mayumi et al with the at least three surface points coupled to the baseplate instead of to the motor. The rationale is as follows: one of ordinary skill in the art would have been motivated to provide the mounting interface of Mayumi et al with the at least three surface points coupled to the baseplate instead of to the motor as it would avoid the machine work step on the motor.

13. Claims 16-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elsing et al (U.S. Pat. 5,847,476) in view of Mayumi et al.

As per claims 16-17, 19-23, Elsing et al discloses a data storage system (figures 1, 3-6) comprising a storage medium 8; an actuator 18 including a transducer 12 disposed at a distal end of an actuator arm 16, an actuator motor 20 coupled to the actuator, for moving the transducer relative to the storage medium; a baseplate 4; a spindle motor 48 for rotating the storage medium; a mount flange, coupled to the spindle motor, for coupling the spindle motor to the baseplate; and a mounting interface disposed between the mount flange and the baseplate. Elsing et al does not disclose a mounting interface comprising at least three surface points forming a single plane acting as a common boundary between the mount flange and the

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baseplate. Mayumi et al discloses a motor with a mounting interface described supra. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the data storage system of Elsing et al with the mounting interface as taught by Mayumi et al. The rationale is as follows: one of ordinary skill in the art would have been motivated to provide the data storage system of Elsing et al with the mounting interface as taught by Mayumi et al as doing this would separate a large vibrating source into smaller vibrating sources thus reducing the vibration level of the structure.

As per claims 24-30, neither Elsing et al nor Mayumi et al discloses a damping ring. Official Notice was given that it was notoriously old and well known in the art to provide a damping ring to dissipate distortion energy. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the data storage system of Elsing et al in view of Mayumi et al with the damping ring. The motivation would have been: it was well known that the provision of a damping ring between the motor and the baseplate would reduce the transmitted vibrations produced during the operation of the motor.

As per claim 18, neither Elsing et al nor Mayumi et al discloses the at least three surface points coupled to the baseplate. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the data storage system of Elsing et al in view of Mayumi et al with the at least three surface points coupled to the baseplate instead of to the motor. The rationale is as follows: one of ordinary skill in the art would have been

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motivated to provide the data storage system with the at least three surface points coupled to the baseplate instead of to the motor as it would avoid the machine work step on the motor.

*Conclusion*

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Periyathamby et al discloses a mounting flange for an ultra quiet electric motor; Vollmer et al discloses a device for incorporating a motor; Maughan et al discloses a disk drive constructed to isolate motor vibration; McCarty discloses a mounting arrangement for fan motor.

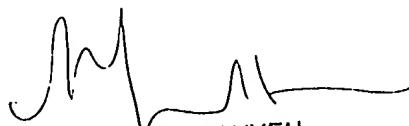
15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angel Castro whose telephone number is (703) 308-8435. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton B. Burgess, can be reached at (703) 305-4792. The fax phone number for this Group Art Unit is (703) 308-9051 (formal faxes only). For informal faxes, the fax number is (703) 305-7201.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

A.C.

Angel Castro, Ph.D.

July 3, 2000

  
HOA T. NGUYEN  
PRIMARY EXAMINER  
2754

Form PTO 1449 U.S. Dept of Commerce : Atty. Docket No. : Serial No. .  
 Rev 7-80 Patent & Trademark Off. : SA998163 : 09/191,577  
 : Applicant(s)  
 LIST OF PRIOR ART CITED BY APPLICANT(S) : Frees et al.  
 (Use several sheets if necessary) : File Date : Group  
 : 11/13/98 : 2754

## U.S. PATENT DOCUMENTS

EXAM.:	DOCUMENT	CLASS/	FILING
ENTL.:	NUMBER	SUBCLASS	DATE
AC:1A:	5,796,707	08/18/98 S. Kim	369/219 10/09/96
AC:1B:	5,081,551	01/14/92 T. Aruga	360/97.01 03/28/89
AC:1C:	3,790,114	02/05/74 F. Italiano et al.	248/13 01/10/72
AC:1D:	4,849,667	07/18/89 G. Morrill	110/91 11/21/98
AC:1E:	5,376,850	12/27/94 J. W. Elsing et al.	310/07 R 07/02/93
AC:1F:			
:	:		
:	:		
:	:		

## FOREIGN COUNTRY

:	DOC. NO.:	DATE	COUNTRY	CLASS/	TRANSLATION
:	:	:	:	SUBCLASS	YES : NO
AC:2A:	07169258	10/12/93	Japan	G11B 33/12	.X
AC:2B:	GB'2185356A	01/09/87	UK	H03K 15/14	.X
AC:2C:	GB 2085635A	08/14/81	UK	G11B 3/60	.X
AC:2D:	GB 2187325A	01/14/87	UK	G11B 33/12	.X
AC:2E:	EP 0234661	02/20/87	EP	G11B 33/08	.X
AC:2F:	EP 0847127A1	09/22/97	EP	H03K 7/116	.X
AC:2G:	PCT/GB99/03554	01/27/99	PCT		.X

## OTHER PRIOR ART (INCLUD. AUTHOR, TITLE, DATE, PERTINENT PG., ETC.)

:3A:  
 :3B:  
 :3C:  
 :3D:  
 :3E:

EXAMINER ANGEL CASTRO DATE CONSIDERED 6/22/2000

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 209; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant(s).

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09/19/577

NOTICE OF DRAFTSPERSON'S  
PATENT DRAWING REVIEWThe drawing(s) filed (insert date) 11/13/98 are:A. ☐ approved by the Draftsperson under 37 CFR 1.84 or 1.152.B. ☒ objected to by the Draftsperson under 37 CFR 1.84 or 1.152 for the reasons indicated below. The Examiner will require submission of new, corrected drawings when necessary. Corrected drawing must be submitted according to the instructions on the back of this notice.

1. DRAWINGS. 37 CFR 1.84(a): Acceptable categories of drawings:  
Black ink. Color.  
Color drawings are not acceptable until petition is granted.  
Fig(s) \_\_\_\_\_  
Pencil and non black ink not permitted. Fig(s) \_\_\_\_\_
2. PHOTOGRAPHS. 37 CFR 1.84 (b)  
1 full-tone set is required. Fig(s) \_\_\_\_\_  
Photographs not properly mounted (must use bristol board or photographic double-weight paper). Fig(s) \_\_\_\_\_  
Poor quality (half-tone). Fig(s) \_\_\_\_\_
3. TYPE OF PAPER. 37 CFR 1.84(c)  
Paper not flexible, strong, white, and durable.  
Fig(s) \_\_\_\_\_  
Erasures, alterations, overwritings, interlineations, folds, copy machine marks not accepted. Fig(s) \_\_\_\_\_  
Mylar, velum paper is not acceptable (too thin). Fig(s) \_\_\_\_\_
4. SIZE OF PAPER. 37 CFR 1.84(f): Acceptable sizes:  
21.0 cm by 29.7 cm (DIN size A4)  
21.6 cm by 27.9 cm (8 1/2 x 11 inches)  
All drawing sheets not the same size.  
Sheet(s) \_\_\_\_\_  
Drawings sheets not an acceptable size. Fig(s) \_\_\_\_\_
5. MARGINS. 37 CFR 1.84(g): Acceptable margins:  
Top 2.5 cm Left 2.5cm Right 1.5 cm Bottom 1.0 cm  
SIZE: A4 Size  
Top 2.5 cm Left 2.5 cm Right 1.5 cm Bottom 1.0 cm  
SIZE: 8 1/2 x 11  
Margins not acceptable. Fig(s) 1, 3  
Top (T) \_\_\_\_\_ Left (L) \_\_\_\_\_  
Right (R) \_\_\_\_\_ Bottom (B) \_\_\_\_\_
6. VIEWS. 37 CFR 1.84(h)  
REMINDER: Specification may require revision to correspond to drawing changes.  
Partial views. 37 CFR 1.84(h)(2)  
Brackets needed to show figure as one entity.  
Fig(s) \_\_\_\_\_  
Views not labeled separately or properly.  
Fig(s) \_\_\_\_\_  
Enlarged view not labeled separately or properly.  
Fig(s) \_\_\_\_\_
7. SECTIONAL VIEWS. 37 CFR 1.84 (h)(3)  
Hatching not indicated for sectional portions of an object.  
Fig(s) \_\_\_\_\_  
Sectional designation should be noted with Arabic or Roman numbers. Fig(s) \_\_\_\_\_
8. ARRANGEMENT OF VIEWS. 37 CFR 1.84(i)  
Words do not appear on a horizontal, left-to-right fashion when page is either upright or turned so that the top becomes the right side, except for graphs. Fig(s) \_\_\_\_\_
9. SCALE. 37 CFR 1.84(k)  
Scale not large enough to show mechanism without crowding when drawing is reduced in size to two-thirds in reproduction.  
Fig(s) \_\_\_\_\_
10. CHARACTER OF LINES, NUMBERS, & LETTERS. 37 CFR 1.84(l)  
☒ Lines, numbers & letters not uniformly thick and well defined, clean, durable and black (poor line quality). Fig(s) 1, 3
11. SHADING. 37 CFR 1.84(m)  
Solid black areas pale. Fig(s) \_\_\_\_\_  
Solid black shading not permitted. Fig(s) \_\_\_\_\_  
Shade lines, pale, rough and blurred. Fig(s) \_\_\_\_\_
12. NUMBERS, LETTERS, & REFERENCE CHARACTERS. 37 CFR 1.84(p)  
Numbers and reference characters not plain and legible. Fig(s) \_\_\_\_\_  
Figure legends are poor. Fig(s) \_\_\_\_\_  
Numbers and reference characters not oriented in the same direction as the view. 37 CFR 1.84(p)(1)  
Fig(s) \_\_\_\_\_  
English alphabet not used. 37 CFR 1.84(p)(2)  
Figs \_\_\_\_\_  
Numbers, letters and reference characters must be at least .32 cm (1/8 inch) in height. 37 CFR 1.84(p)(3)  
Fig(s) \_\_\_\_\_
13. LEAD LINES. 37 CFR 1.84(q)  
Lead lines cross each other. Fig(s) \_\_\_\_\_  
Lead lines missing. Fig(s) \_\_\_\_\_
14. NUMBERING OF SHEETS OF DRAWINGS. 37 CFR 1.84(i)  
Sheets not numbered consecutively, and in Arabic numerals beginning with number 1. Sheet(s) \_\_\_\_\_
15. NUMBERING OF VIEWS. 37 CFR 1.84(u)  
Views not numbered consecutively, and in Arabic numerals, beginning with number 1. Fig(s) \_\_\_\_\_
16. CORRECTIONS. 37 CFR 1.84(w)  
Corrections not made from prior PTO-948 dated \_\_\_\_\_
17. DESIGN DRAWINGS. 37 CFR 1.152  
Surface shading shown not appropriate. Fig(s) \_\_\_\_\_  
Solid black shading not used for color contrast. Fig(s) \_\_\_\_\_

## COMMENTS

REVIEWER

A. D.

DATE

7/7/99

TELEPHONE NO.

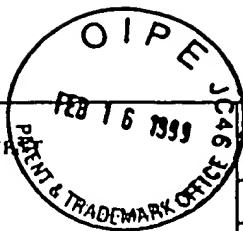
ATTACHMENT TO PAPER NO.

7



Filed: February 11, 1999

Sheet 1 of 1



FORM 1449\*

## INFORMATION DISCLOSURE STATEMENT

IN AN APPLICATION

(Use several sheets if necessary)

Docket Number:

SA998163 / 30569.117US01

Application Number:

09/191,577

Applicant: FREES ET AL.

Filing Date: 11/13/1998

Group Art Unit: UNKNOWN

## U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
AC	5,040,764	08/20/1991	Dubois	248	635	
AC	5,692,728	12/02/1997	Shiozawa	248	618	
AC	5,804,776	09/08/1998	Bizlewicz	181	207	

## FOREIGN PATENT DOCUMENTS

	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
AC	05-44774	Unknown	JP			Abstract only	

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)


EXAMINER ANGEE CASTRO

DATE CONSIDERED 6/22/2000

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form for next communication to the Applicant.

FORM PTO-892

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICE

SERIAL NO.

09/191,577

GROUP ART  
UNIT

2754

ATTACHMENT  
TO PAPER NO.

7

## NOTICE OF REFERENCES CITED

APPLICANT(S)

Gregory M. FREES et al

## U.S. PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	NAME	CLASS	SUB-CLASS	FILING DATE
	A	5,914,550	6/1999	Periyathamby et al	310	91	
	B	5,847,476	12/1998	Elsing et al	310	51	
	C	5,786,647	7/1998	Vollmer et al	310	89	
	D	5,365,388	11/1994	Maughan et al.	360	99.04	
	E	4,806,811	2/1989	Mayumi et al.	310	89	
	F	3,941,339	3/1976	McCarty	248	15	
	G						
	H						
	I						
	J						
	K						

## FOREIGN PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUB-CLASS
	L						
	M						
	N						
	O						
	P						
	Q						

## OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

	R	
	S	
	T	
	U	

EXAMINER

Angel Castro

DATE

July 3, 2000

Form 892ccs2106b

\* A copy of this reference is not being furnished with this office action.  
(See Manual of Patent Examining Procedure, section 707.05(a).)



Dear Patent and Trademark Office Customer:

The Technical Support Staff of Technology Center 2700 has undertaken continuous quality improvement efforts to ensure that the accompanying correspondence meets high quality standards, and focuses on good customer service. It is important to us that you are satisfied with the services we provide.

If the contents of the attached correspondence has any clerical omissions, e.g., missing references or pages, illegible text, or errors, please contact Verlene Green or Earline Green, as soon as possible. We will take the appropriate action to expedite the necessary corrections.

Verlene D. Green  
Supervisory Legal Instruments Examiner  
Phone Number: (703) 305-4376

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Supervisory Legal Instruments Examiner  
Phone Number: (703) 305-4901

Fax No. (703) 308-9051 or (703) 308-9052

## Attention: Policy on Returning Phone Calls

A PTO-wide customer service standard is if a PTO employee being called is not available, they will return your call by the next business day, or, if you request, an alternate point of contact will be provided. Technology Center 2700 is committed to meeting this service standard. If you have called any employee in our Technology Center and have not received a return phone call within one (1) business day or have not been provided another point of contact, please contact the Technology Center at 703-306-5631. We ensure that you will receive a return phone call, from an employee with the ability to assist you, within four (4) business hours of this contact. We appreciate your help in assisting us to help you.

The employees of Technology Center 2700

# Appendix B

S/N 09/191,577

**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: FREES, et al. Examiner: Castro  
Serial No.: 09/191,577 Group Art Unit: 2754  
Filed: 11/13/98 Docket No.: SA998163  
501.117US01

Title: MOUNTING INTERFACE FOR A SPINDLE MOTOR

CERTIFICATE UNDER 37 C.F.R. 1.8: The undersigned hereby certifies that this Transmittal Letter and the paper, as described herein, are being deposited in the United States Postal Service, as first class mail, with sufficient postage, in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on October 6, 2000.

Iain A. McIntyre  
Name

Iain A. McIntyre  
Signature

Box No Fee  
Assistant Commissioner for Patents  
Washington, D.C. 20231

- ☒ Amendment  
☒ Transmittal Sheet  
☒ Return postcard

CLAIMS AS AMENDED					
	Claims Remaining After Amendment	Highest Number Previously Paid For	Extra Claims Present	Rate	Additional Fee
Total Claims	51	51	0	X \$18.00	0.00
Indep. Claims	4	4	0	X \$80.00	0.00
Multiply Dependent Claims					\$ 0.00
TOTAL ADDITIONAL FEE FOR THIS AMENDMENT					\$ 0.00

Authorization is hereby given to charge any additional fees or credit any overpayments that may be deemed necessary to Deposit Account Number 50-1038.

Respectfully submitted,

Altera Law Group, LLC  
10749 Bren Road East, Opus 2  
Minneapolis, MN 55343  
(952)-912-0571

Date: October 6, 2000

By:

Iain A. McIntyre  
Iain A. McIntyre  
Reg. No. 40,337  
IAM/mar

S/N 09/191,577

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	FREES, et al.	Examiner:	Castro
Serial No.:	09/191,577	Group Art Unit:	2754
Filed:	11/13/98	Docket No.:	SA998163 501.117US01

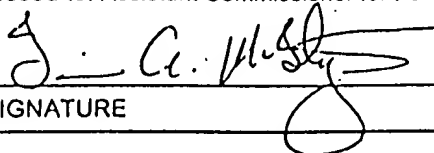
Title: MOUNTING INTERFACE FOR A SPINDLE MOTOR

CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, DC 20231 on October 6, 2000.

Iain A. McIntyre

NAME



SIGNATURE

AMENDMENT AND RESPONSE UNDER 37 C.F.R. §1.111

Box No Fee  
Assistant Commissioner for Patents  
Washington, D.C. 20231

Dear Sir:

In response to the Office Action dated July 6, 2000, setting a three (3) month shortened statutory period for response, please amend the above-identified patent application as follows.

Claims 1-51 are pending in the application. Reconsideration and allowance of the pending claims of the application are respectfully requested, in view of the following amendments and remarks.

## **IN THE CLAIMS**

The entire set of current claims is provided for the Examiner's convenience.

Kindly amend claims 1, 5, 8, 11, 12, 14-16, 20, 23, 26, 27, 29, 30, 31, 35, 38, 41-48, 50 and 51 as follows:

1. (amended) A mounting interface for providing a steadfast relationship between a motor and a baseplate, the mounting interface comprising at least three surface points forming a single plane acting as a common boundary between the motor and the baseplate, positions of the at least three surface points being selected to affect a vibrational characteristic of the motor.

2. The mounting interface of claim 1 wherein the at least three surface points further comprise pads.

3. The mounting interface of claim 1 wherein the at least three surface points are coupled to the baseplate.

4. The mounting interface of claim 1 wherein the motor includes a mount flange, wherein the at least three surface points are coupled to the mount flange.

5. (amended) The mounting interface of claim 1 wherein the motor includes a mount flange and wherein the at least three surface points provide reduced contact area between the mount flange and the baseplate, the reduced contact area lowering [the] rigidity of the mount flange and [the] lowering resonant frequencies.

6. The mounting interface of claim 1 wherein the at least three surface points have a surface area, the surface area being chosen to reduce acoustical noise.

7. The mounting interface of claim 1 wherein the at least three surface points are formed using a predetermined material, the predetermined material being chosen to reduce acoustical noise.

8. (amended) The mounting interface of claim 1 wherein the at least three surface points are positioned at predetermined radial angles therebetween, the predetermined radial angles being chosen to reduce acoustical noise.

9. The mounting interface of claim 1 further comprising a damping ring disposed on an inner side and between the at least three surface points for dissipating distortion energy.

10. The mounting interface of claim 9 wherein the motor includes a mount flange and wherein the damping ring is coupled to the mount flange.

11. (amended) The mounting interface of claim 10 wherein the damping ring further comprises a [vertical] portion disposed perpendicular to the single plane on an outer surface of the at least three surface points of the mounting interface, the [vertical] portion engaging with the baseplate to dissipate energy resulting from sheer distortion between the baseplate and the at least three surface points.

12. The mounting interface of claim 11 wherein the damping ring further comprises a seal disposed on the [vertical] portion on [an] the outer surface of the at least three surface points of the mounting interface, the seal forming a barrier in a gap between the mount flange and the baseplate.

13. The mounting interface of claim 9 wherein the damping ring is coupled to the baseplate.

14. (amended) The mounting interface of claim 13 wherein the damping ring further comprises a [vertical] portion disposed perpendicular to the single plane on an outer surface of the at least three surface points of the mounting interface, the [vertical] portion engaging with the baseplate and the at least three surface points to dissipate energy resulting from sheer distortion between the baseplate and the at least three surface points.

15. (amended) The mounting interface of claim 14 wherein the damping ring further comprises a seal disposed on the [vertical] portion on [an] the outer surface of



the at least three surface points of the mounting interface, the seal forming a barrier in a gap between the motor and the baseplate.

16. (amended) A data storage system, comprising:  
a storage medium;  
an actuator including a transducer disposed at a distal end of an actuator arm;  
an actuator motor, coupled to the actuator, for moving the transducer relative to the storage medium;  
a baseplate;  
a spindle motor for rotating the storage medium;  
a mount flange, coupled to the spindle motor, for coupling the spindle motor to the baseplate; and  
a mounting interface disposed between the mount flange and the baseplate, the mounting interface comprising at least three surface points forming a single plane acting as a common boundary between the mount flange and the baseplate, positions of the at least three surface points being selected to affect a vibrational characteristic of the spindle motor.

17. The data storage system of claim 16 wherein the at least three surface points further comprise pads.

18. The data storage system of claim 16 wherein the at least three surface points are coupled to the baseplate.

19. The data storage system of claim 16 wherein the at least three surface points are coupled to the mount flange.

20. (amended) The data storage system of claim 16 wherein the at least three surface points provide reduced contact area between the mount flange and the baseplate, the reduced contact area lowering [the] rigidity of the mount flange and [the] lowering resonant frequencies.

21. The data storage system of claim 16 wherein the at least three surface points have a surface area, the surface area being chosen to reduce acoustical noise.

22. The data storage system of claim 16 wherein the at least three surface points are formed using a predetermined material, the predetermined material being chosen to reduce acoustical noise.

23. (amended) The data storage system of claim 16 wherein the at least three surface points are positioned at predetermined radial angles therebetween, the predetermined radial angles being chosen to reduce acoustical noise.

24. The data storage system of claim 16 further comprising a damping ring disposed on an inner side and between the at least three surface points for dissipating distortion energy.

25. The data storage system of claim 24 wherein the damping ring is coupled to the mount flange.

26. (amended) The data storage system of claim 25 wherein the damping ring further comprises a [vertical] portion disposed perpendicular to the single plane on an outer surface of the at least three surface points of the mounting interface, the [vertical] portion engaging with the baseplate to dissipate energy resulting from sheer distortion between the baseplate and the at least three surface points.

27. (amended) The data storage system of claim 26 wherein the damping ring further comprises a seal disposed on the [vertical] portion on [an] the outer surface of the at least three surface points of the mounting interface, the seal forming a barrier in a gap between the mount flange and the baseplate.

28. The data storage system of claim 24 wherein the damping ring is coupled to the baseplate.

29. (amended) The data storage system of claim 28 wherein the damping ring further comprises a [vertical] portion disposed perpendicular to the single plane on an outer surface of the at least three surface points of the mounting interface, the [vertical] portion engaging with the baseplate and the at least three surface points to

dissipate energy resulting from sheer distortion between the baseplate and the at least three surface points.

30. (amended) The data storage system of claim 29 wherein the damping ring further comprises a seal disposed on the [vertical] portion on [an] the outer surface of the at least three surface points of the mounting interface, the seal forming a barrier in a gap between the motor and the baseplate.

31. (amended) A method for reducing acoustic dynamics of a spindle motor, comprising forming a mounting interface between a spindle motor and a baseplate, the mounting interface comprising at least three surface points forming a single plane acting as a common boundary between the spindle motor and the baseplate, positions of the at least three surface points being selected to affect a vibrational characteristic of the motor.

32. The method of claim 31 wherein the forming a mounting interface between a spindle motor and a baseplate further comprises forming the mounting interface on the baseplate.

33. The method of claim 31 wherein the forming a mounting interface between a spindle motor and a baseplate further comprises forming the mounting interface on a mount flange and coupling the mount flange to the spindle motor.

34. The method of claim 31 wherein the forming a mounting interface further comprises forming at least three surface pads.

35. (amended) The method of claim 31 wherein the forming a mounting interface further comprises reducing the contact area between [the] a mount flange of the spindle motor and the baseplate, the reduced contact area lowering [the] resonant frequencies.

36. The method of claim 31 wherein the forming a mounting interface further comprises forming at least three surface points having a surface area, the surface area being chosen to reduce acoustical noise.

37. The method of claim 31 wherein the forming a mounting interface further comprises forming at least three surface points using a predetermined material, the predetermined material being chosen to reduce acoustical noise.

38. (amended) The method of claim 31 wherein the forming a mounting interface further comprises forming at least three surface points with a predetermined radial angle between each of the at least three surface points, the predetermined radial angles being chosen to reduce acoustical noise.

39. The method of claim 31 further comprising forming a damping ring on an inner side and between the at least three surface points for dissipating distortion energy.

40. The method of claim 39 wherein the forming a mounting interface between a spindle motor and a baseplate further comprises forming the mounting interface on a mount flange and wherein the damping ring is coupled to the mount flange.

41. (amended) The method of claim 40 wherein the forming of the damping ring further comprises forming a [vertical] portion perpendicular to the single plane on an outer surface of the at least three surface points of the mounting interface, the [vertical] portion engaging with the baseplate to dissipate energy resulting from sheer distortion between the baseplate and the at least three surface points.

42. (amended) The [mounting interface] method of claim 41 wherein the forming of the damping ring further comprises forming a seal on the [vertical] portion at [an] the outer surface of the at least three surface points of the mounting interface, the seal forming a barrier in a gap between the mount flange and the baseplate.

43. (amended) The [mounting interface] method of claim 39 wherein the damping ring is coupled to the baseplate.

44. (amended) The [mounting interface] method of claim 43 wherein the forming of the damping ring further comprises forming a [vertical] portion perpendicular

to the single plane on an outer surface of the at least three surface points of the mounting interface, the [vertical] portion engaging with the baseplate and the at least three surface points to dissipate energy resulting from sheer distortion between the baseplate and the at least three surface points.

45. (amended) The [mounting interface] method of claim 44 wherein the forming of the damping ring further comprises forming a seal on the [vertical] portion at [an] the outer surface of the at least three surface points of the mounting interface, the seal forming a barrier in a gap between the motor and the baseplate.

46. (amended) A mounting interface for providing a steadfast relationship between a motor and a baseplate, the mounting interface comprising a damping ring disposed on an inner side and between at least three surface points, the damping ring dissipating distortion energy, positions of the at least three surface points being selected so as to affect a vibrational characteristic of the motor.

47. (amended) The mounting interface of claim 46 wherein the damping ring further comprises a [vertical] portion disposed on an outer surface of the at least three surface points of the mounting interface, the [vertical] portion engaging with the baseplate to dissipate energy resulting from sheer distortion between the baseplate and the at least three surface points.

48. (amended) The mounting interface of claim 47 wherein the damping ring further comprises a seal disposed on the [vertical] portion on [an] the outer surface of the at least three surface points of the mounting interface, the seal forming a barrier in a gap between the mount flange and the baseplate.

49. The mounting interface of claim 46 wherein the damping ring is coupled to the baseplate.

50. (amended) The mounting interface of claim 49 wherein the damping ring further comprises a [vertical] portion disposed on an outer surface of the at least three surface points of the mounting interface, the [vertical] portion engaging with the

baseplate and the at least three surface points to dissipate energy resulting from sheer distortion between the baseplate and the at least three surface points.

51. (amended) The mounting interface of claim 50 wherein the damping ring further comprises a seal disposed on the [vertical] portion on [an] the outer surface of the at least three surface points of the mounting interface, the seal forming a barrier in a gap between the motor and the baseplate.

### REMARKS

Claims 1-51 are pending in the patent application. Claims 1, 5, 8, 11, 12, 14-16, 20, 23, 26, 27, 29, 30, 31, 35, 38, 41-48, 50 and 51 have been amended. No new matter has been added.

Claims 5, 11, 12, 14, 15, 20, 26, 27, 29, 30, 35, 41-45, 47, 48, 50 and 51 are rejected under 35 U.S.C. § 112, second paragraph for being vague and indefinite. these claims have been amended. It is believed that all claims comply with 35 U.S.C. § 112.

Claims 1, 2, 4-8, 31, 33-38 are rejected under 35 U.S.C. § 102(b) as being anticipated by Mayumi et al. (U.S. Patent No. 4,806,811) (Mayumi). Mayumi (Fig. 2A) discloses a motor casing (1), having a number of motor mounting portions (3) positioned at one end, each of the motor mounting positions having a mounting hole (4) passing therethrough. The motor mounting portions are provided on the motor casing in order to provide a surface that can be machined with high accuracy in a mass production process (col. 3, lines 17-21).

In the present invention, there is a realization of the need to dissipate distortion energy emanating from vibration modes of the disk drive motor, and to provide a mounting interface between the motor and the baseplate that stabilizes the baseplate/mount. Accordingly, the invention of amended claim 1 is directed to a mounting interface for providing a steadfast relationship between a motor and a baseplate. The mounting interface includes at least three surface points forming a single plane acting as a common boundary between the motor and the baseplate, the

positions of the at least three surface points being selected to affect a vibrational characteristic of the motor.

Moreover the invention of amended claim 31 is directed to a method for reducing acoustic dynamics of a spindle motor. The method includes forming a mounting interface between a spindle motor and a baseplate, the mounting interface comprising at least three surface points forming a single plane acting as a common boundary between the spindle motor and the baseplate, positions of the at least three surface points being selected to affect a vibrational characteristic of the motor.

To anticipate a claim, the reference must teach every element of the claim. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Therefore, all claim elements, and their limitations, must be found in the prior art reference to maintain a rejection based on 35 U.S.C. §102.

Applicants respectfully submit that Mayumi does not teach every element of claims 1 and 31, and therefore fails to anticipate claims 1 and 31. Mayumi does not disclose that the positions of the motor mounting portions are selected to affect a vibrational characteristic of the motor. Mayumi is silent as to vibration in the motor.

Therefore, since Mayumi does not disclose all the limitations of amended claims 1 and 31, the inventions of amended claims 1 and 31 are not anticipated by Mayumi, and are patentable.

Claims 2, 4-8 and 33-38 further define the inventions of claims 1 and 31 and depend therefrom. Accordingly, since claims 1 and 31 are allowable, claims 2, 4-8 and 33-38 are also allowable.

Regarding claims 6 and 36, Mayumi does not state that the area of the motor mounting portions is selected so as to reduce acoustical noise. Mayumi is silent on this point.

Regarding claims 7 and 37, Mayumi fails to teach that the three surface points are formed of a material chosen to select acoustical noise. Instead, Mayumi teaches that the material of the motor mounting portions is the same as the motor casing.

Regarding claims 8 and 38, Mayumi fails to disclose that the positions of the at least three surface points are set with a predetermined radial angle therebetween so as to reduce acoustical noise. Mayumi is silent on the problem of vibration and acoustical noise.

Claims 3, 9-15, 32 and 39-51 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Mayumi. The Office Action states that Mayumi fails to a damping ring. The Examiner takes Official Notice that it was old and well known in the art to provide a damping ring to dissipate distortion energy, and that it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide Mayumi's mounting surface with a damping ring. The Office Action states that the motivation would have been to reduce the transmitted vibrations produced during operation of the motor.

To establish *prima facie* obviousness of a claimed invention, the Examiner has the burden of proving that three basic criteria are met. First, there must be some suggestion or motivation to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Applicants' disclosure. All three of these criteria must be met in order to support a finding of *prima facie* obviousness of a claimed invention (see, e.g., MPEP § 2142).

Applicants respectfully assert that disposing a damping ring on an inner side and between at least three surface points of a mounting interface for dissipating distortion energy do not constitute facts outside of the record which are capable of instant and unquestionable demonstration as being "well-known" in the art. The references relied on by the Examiner, for example, fail to disclose this purportedly "well known" fact. Furthermore, the Officially Noticed facts do not teach or suggest several of the specifically claimed configurations, as is discussed in detail below. Applicants contend



that reasonable doubt exists regarding the circumstances justifying the Examiner's exercise of official notice, and request that the Examiner provide evidence that demonstrates the appropriateness of the officially noticed facts pursuant to MPEP § 2144.03, and also that the Examiner explain how the officially noticed facts teach the specific limitations of all claims that are rejected under the officially noticed facts. Applicants reserve the opportunity to respond to the Examiner's comments concerning any such officially noticed facts.

Although the Examiner has taken Official Notice of the use of a damping ring, the Official Action fails to show how Mayumi and the officially noticed facts disclose all the features of every claim. The claim must be obvious as a whole: all words in a claim must be considered in judging the patentability of that claim against the prior art. *In re Wilson* 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970), see also MPEP § 2143.03.

Regarding claims 9, 39 and 46, the Official Action fails to show how the modified prior art teaches or suggests the particular limitation of a damping ring disposed on an inner side and between the at least three surface points for dissipating surface energy.

Regarding claims 11 and 41, the modified prior art fails to teach or suggest the claimed feature of the damping ring including a portion perpendicular to the single plane on an outer surface of the at least three surface points of the mounting interface, or that the portion engages with the baseplate to dissipate energy resulting from sheer distortion between the baseplate and the at least three surface points.

Regarding claims 12, 15, 42 and 45, the modified prior art fails to teach or suggest that the damping ring forms a seal on the portion perpendicular to the single plane, and also fails to teach or suggest that the seal forms a barrier in a gap between the mount flange and the baseplate.

Regarding claims 14 and 44, the modified prior art fails to teach or suggest that the damping ring includes a portion perpendicular to the single plane on an outer surface of the at least three surface points, where the portion engages with the baseplate and the at least three surface points to dissipate energy resulting from sheer distortion between the baseplate and the at least three surface points.

Therefore, since the modified prior art fails to teach or suggest all the limitations of the claims 9-15 and 39-45, there is no *prima facie* case of obviousness against these claims, and claims 9-15 and 39-45 are patentable over the cited art.

Claims 3 and 32 further define and depend from allowable claims 1 and 31. Therefore, these claims are also allowable.

Amended claim 46 is directed to a mounting interface for providing a steadfast relationship between a motor and a baseplate. The mounting interface includes a damping ring disposed on an inner side and between at least three surface points, the damping ring dissipating distortion energy. The positions of the at least three surface points are selected so as to affect a vibrational characteristic of the motor.

As has been discussed above, Mayumi fails to teach or suggest the selection of the positions of the at least three surface points so as to affect a vibrational characteristic of the motor. The Officially Noticed facts fail to correct the deficiency of Mayumi. Accordingly, the modified prior art fails to teach or suggest all the limitations of amended claim 46. Therefore, there is no *prima facie* case of obviousness against claim 46, which is patentable over the cited art.

Claims 47-51 further define the invention of amended claim 46 and depend therefrom. Furthermore, the modification of Mayumi by the Officially Noticed facts fails to teach or disclose the particular features of claims 47-51.

Regarding claim 47, the modified prior art fails to teach or suggest the claimed feature of the damping ring including a portion on an outer surface of the at least three surface points of the mounting interface, or that the portion engages with the baseplate to dissipate energy resulting from sheer distortion between the baseplate and the at least three surface points.

Regarding claims 48 and 51, the modified prior art fails to teach or suggest that the damping ring forms a seal on the portion, and also fails to teach or suggest that the seal forms a barrier in a gap between the mount flange and the baseplate.

Regarding claims 50, the modified prior art fails to teach or suggest that the damping ring includes a portion on an outer surface of the at least three surface points, where the portion engages with the baseplate and the at least three surface points to

dissipate energy resulting from sheer distortion between the baseplate and the at least three surface points.

Therefore, since the modified prior art fails to teach or suggest all the limitations of the claims 47-51, there is no *prima facie* case of obviousness against these claims, and claims 47-51 are patentable over the cited art.

Claims 16-30 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Elsing et al (U.S. Patent 5,847,476) (Elsing) in view of Mayumi. The Office Action states that Elsing shows a data storage system comprising a storage medium, an actuator including a transducer on an actuator arm, an actuator motor for moving the transducer relative to the storage medium, a baseplate, a spindle motor for rotating the storage medium, a mount flange on the motor and a mounting interface disposed between the mount flange and the baseplate. The Office Action states that Elsing does not disclose a mounting interface comprising at least three surface points forming a single plane acting as a common boundary between the mount flange and the baseplate. The Office Action further states that Mayumi discloses the mounting interface and that it would have been obvious to one of ordinary skill in the art to provide the data storage system of Elsing with Mayumi's mounting interface. The motivation given for such a combination is to separate a large vibrating source into smaller vibrating sources thus reducing the vibration level of the structure.

The mounting interface of amended claim 16 includes at least three surface points forming a single plane acting as a common boundary between the mount flange and the baseplate, positions of the at least three surface points being selected to affect a vibrational characteristic of the spindle motor.

As has been discussed above, Mayumi fails to teach or suggest that the positions of the least three surface points are selected to affect the vibrational characteristic of the spindle motor. Elsing fails to correct this deficiency of Mayumi. Therefore, the proposed combination of Elsing and Mayumi fails to teach and suggest all the limitations of claim 16. Therefore, there is no *prima facie* case of obviousness against claim 16, and claim 16 is patentable over the proposed combination of references. .

Claims 17-30 further define and depend from claim 16. Accordingly, these claims should also be patentable.

Regarding claim 21, neither Elsing nor Mayumi teach or suggest that the surface area of the three surface points is selected to reduce acoustical noise. The two references are silent on this issue.

Regarding claim 22, neither Elsing nor Mayumi teach or suggest that the three surface points are formed of a material chosen to select acoustical noise. Instead, Mayumi teaches that the material of the motor mounting portions is the same as the motor casing.

Regarding claim 23, neither Elsing nor Mayumi teach or suggest that the positions of the at least three surface points are set with a predetermined radial angle therebetween so as to reduce acoustical noise. Mayumi is silent on the problem of vibration and acoustical noise.

Regarding claims 24 - 30, Official notice is given that it is old and well known in the art to provide a damping ring to dissipate distortion energy, and that it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the mounting surface with a damping ring.

Applicants reiterates the objection to the officially noticed facts provided above with regard to the rejection of claims 9-15 and 39-51. The proposed combination of Elsing and Mayumi, modified by the officially noticed facts fails to teach or suggest the limitations of the claims. In particular, with regard to claim 24, the modified combination of references fails to teach or suggest that the damping ring is disposed on an inner side and between the at least three surface points for dissipating distortion energy.

With regard to claim 26, the modified combination of references fails to teach or suggest a damping ring that includes a portion perpendicular to the single plane on an outer surface of the at least three surface points of the mounting interface, or that the portion engages with the baseplate to dissipate energy resulting from sheer distortion between the baseplate and the at least three surface points.

With regard to claims 27 and 30, the modified combination of references fails to teach or suggest that the damping ring includes a seal on the portion perpendicular to

the single plane, and also fails to teach or suggest that the seal forms a barrier in a gap between the mount flange and the baseplate.

With regard to claim 29, the modified combination of references fails to teach or suggest that the damping ring includes a portion perpendicular to the single plane on an outer surface of the at least three surface points, where the portion engages with the baseplate and the at least three surface points to dissipate energy resulting from sheer distortion between the baseplate and the at least three surface points.

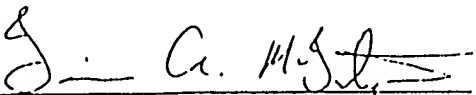
Therefore, since the modified prior art fails to teach or suggest all the limitations of the claims 17-30, there is no *prima facie* case of obviousness against these claims, and claims 17-30 are patentable over the cited art.

In view of the amendments and reasons provided above, Claims 1-51 are in condition for allowance. Applicants respectfully requests favorable reconsideration and early allowance of all pending Claims.

The Examiner is invited to contact the below-signed agent at (952) 912- 0571 to discuss any further Issues related to this case.

Respectfully submitted,

Date: October 6, 2000

  
Iain A. McIntyre  
Reg. No. 40,337

ALTERA LAW GROUP, LLC  
10749 Bren Road East  
Opus 2  
Minneapolis, MN 55343  
(952) 912-0523

# Appendix C



UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/191,577 11/13/98 FREES

G 501 117 - US-01  
SA998163/305

EXAMINER

WM02/0104

David W. Lynch  
Altera Law Group, LLC  
10749 Bren Road East, Opus 2  
MINNEAPOLIS MN 55243-4131

CASTRO, A

ART UNIT

PAPER NUMBER

2652

DATE MAILED:

01/04/01

2 Month FR Due 4 Mar '01

3 Month FR Due 4 Apr '01

6 Month Response DUE 4 July '01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.  
09/191,577

Applicant(s)  
Gregory M. FREES et al

Examiner  
Angel Castro

Group Art Unit  
2652



☒ Responsive to communication(s) filed on Oct 10, 2000

☒ This action is FINAL.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 1-51 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1-51 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 9

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---



Art Unit: 2652

### DETAILED ACTION

This Office Action is in response to the Amendment A filed on 10/10/2000.

#### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(c) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1-4, 6-8, 31, 33-34, 36-38, 46 are rejected under 35 U.S.C. 102(e) as being anticipated by Kirkwood (U.S. Pat. 6,045,112).

As per claims 1-4, 6-8, 31, 33-34, 36-38 and 46, Kirkwood discloses a mounting interface (figures 1, 1A) for providing a steadfast relationship between a motor 22 and a baseplate 50, the mounting interface comprising at least three surface points 58 forming a single plane acting as a common boundary between the motor and the baseplate, the positions of the at least three surface points being selected to affect a vibrational characteristic of the motor (column 3, lines 54-62 and column 4, lines 44-47).

Art Unit: 2652

*Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5, 16-20, 21-23, 32 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kirkwood.

As per claims 16-19, 21-23, Kirkwood discloses a mounting interface described supra. Kirkwood does not disclose the data storage system comprising a storage medium, an actuator and a spindle motor for rotating the storage medium. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the mounting interface of Kirkwood into a data storage system comprising a storage medium and an actuator and a spindle motor for rotating the storage medium. The rationale is as follows: one of ordinary skill in the art would have been motivated to incorporate the mounting interface of Kirkwood into a data storage system comprising a storage medium, an actuator and a spindle motor for rotating the storage medium as it would reduce the vibration of the spindle motor as well as the acoustical noise.

As per claims 5, 20 and 35, Kirkwood does not disclose that the at least three surface points provides reduced contact area and lowering the resonant frequencies. Official Notice is

Art Unit: 2652

given that it was notoriously old and well known to lower the resonant frequencies by reducing the contact areas between the motor and the baseplate. It would have been obvious to one of ordinary skill in the art at the time the invention was made to lower the resonant frequencies by reducing the contact areas between the motor and the baseplate. The motivation would have been: lowering the resonant frequencies would prevent a possible damage to the motor and a disk attached to it.

As per claim 32, Kirkwood does not disclose forming the mounting interface on the baseplate. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the mounting interface of Kirkwood on the baseplate. The rationale is as follows: one of ordinary skill in the art would have been motivated to provide the mounting interface of Kirkwood on the baseplate as it would simplify the mounting of the motor.

5. Claims 9-15, 24-30, 39-45, 47-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kirkwood in view of Merriman, Jr. (U.S. Pat. 5,126,607).

As per claims 9-15, 24-30, 39-45, 47-51, Kirkwood discloses a mounting interface described supra. Kirkwood does not disclose a damping ring between the at least three surface points. Merriman, Jr. discloses a motor vibration isolator (figures 1-8) with a mounting interface 10 comprising a damping ring 20, 22, with a portion 22-3 disposed perpendicular to the single plane on an outer surface of at least three point of the mounting interface and a seal 20. It would have been obvious to one of ordinary skill in the art at the time the invention was

Art Unit: 2652

made to provide the mounting interface of Kirkwood with the damping ring and seal as taught by Merriman, Jr. The rationale is as follows: one of ordinary skill in the art would have been motivated to provide the mounting interface of Kirkwood with the damping ring and seal as taught by Merriman, Jr. as it would isolate the motor from the baseplate and provide a circular locating step.

#### *Response to Arguments*

6. Applicant's arguments with respect to claims 1-51 have been considered but are moot in view of the new ground(s) of rejection.

#### *Conclusion*

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Dubois discloses a low frequency vibration absorber; Wilson discloses a cushioned mounting arrangement for a motor housing; Itakura et al discloses an anisotropic damper.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until

Art Unit: 2652

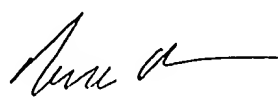
after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angel Castro whose telephone number is (703) 308-8435. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Nguyen, can be reached at (703) 305-9687. The fax phone number for this Group Art Unit is (703) 308-9051 (formal faxes only). For informal faxes, the fax number is (703) 305-7201.

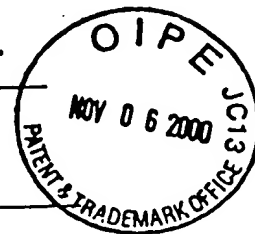
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

Angel Castro, Ph.D.

December 26, 2000

  
DAVID HUDSPETH  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600

rm PTO 1449 U.S. Dept of Commerce : Atty. Docket No. : Serial No.  
 v 7-80 Patent & Trademark Off. : SA998163 : 09/191,577  
 : Applicant(s)  
 ST OF PRIOR ART CITED BY APPLICANT(S) : Frees et al.  
 (Use several sheets if necessary) : File Date : Group  
 : 11/13/98 : 2754



U.S. PATENT DOCUMENTS

AM.:	DOCUMENT	CLASS/	FILING
TL.:	NUMBER	SUBCLASS	DATE
:AA:	5,796,707	08/18/98	S. Kim
:AB:			
:			
:			
:			
:			
:			
:			
:			

369/219  
~~G11B 19/20~~ 10/09/96

FOREIGN COUNTRIES

:	DOC. NO.:	DATE	COUNTRY	CLASS/	TRANSLATION
:	:	:	:	SUBCLASS	YES :
:AL:	GB2185356A	01/09/87	United Kingdom	H02K 15/14	X
:AM:	GB2085635A	08/14/81	United Kingdom	G11B 3/60	X
:AN:	GB2187325A	01/14/87	United Kingdom	G11B 33/12	X
:AO:	JP7169258	10/12/93	Japan	G11B 33/12	X
:					
:					
:					
:					

OTHER PRIOR ART (INCLUD. AUTHOR, TITLE, DATE, PERTINENT PG., ETC.)

:AR:

EXAMINER: ANGEL CASTRO DATE CONSIDERED 12/20/2000

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant(s).

FORM PTO-892	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	SERIAL NO. 09/191,577	GROUP ART UNIT 2652	ATTACHMENT TO PAPER NO. 10
NOTICE OF REFERENCES CITED		APPLICANT(S) Gregory M. FREES et al		

## U.S. PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	NAME	CLASS	SUB-CLASS	FILING DATE
	A	6,045,112 ✓	4/2000	Kirkwood	248	634	
	B	5,126,607 ✓	6/1992	Merriman Jr.	310	51	
	C	5,040,764 ✓	8/1991	Dubois	248	635	
	D	4,648,579 ✓	3/1987	Wilson	248	638	
	E						
	F						
	G						
	H						
	I						
	J						
	K						

## FOREIGN PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUB-CLASS
	L	847057 ✓	6/1998	EPO			
	M						
	N						
	O						
	P						
	Q						

## OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

R	
S	
T	
U	

EXAMINER Angel Castro	DATE January 2, 2001	Form892ccs2106b
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\* A copy of this reference is not being furnished with this office action.  
(See Manual of Patent Examining Procedure, section 707.05(a).)

# Appendix D



S/N 09/191,577

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	FREES ET AL.	Examiner:	Castro, A.
Serial No.:	09/191,577	Group Art Unit:	2652
Filed:	11/13/98	Docket No.:	SA998163 501.117US01

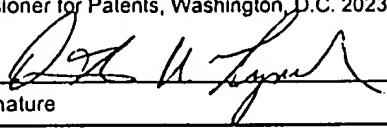
Title: MOUNTING INTERFACE FOR A SPINDLE MOTOR

CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on March 28, 2001.

David W. Lynch

Name

  
Signature

Box AF  
Assistant Commissioner for Patents  
Washington, D.C. 20231

- ☒ Response Under 37 C.F.R. 1.116
- ☒ Change Of Correspondence Address
- ☒ Transmittal Sheet
- ☒ Return postcard

Authorization is hereby given to charge any additional fees or credit any overpayments that may be deemed necessary to Deposit Account Number 50-1038.

Respectfully submitted,

Alterra Law Group, LLC  
6500 City West Parkway, Suite 100  
Minneapolis, Minnesota 55344-7701  
952-912-0539

Date: March 28, 2001

By: 

David W. Lynch  
Reg. No. 36,204

DWL/lmj

S/N 09/191,577

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: FREES ET AL.

Examiner: Castro, A.

Serial No.: 09/191,577

Group Art Unit: 2652

Filed: 11/13/98

Docket No.: SA998163  
501.117US01

Title: MOUNTING INTERFACE FOR A SPINDLE MOTOR

CERTIFICATE OF MAILING UNDER 37 C.F.R. 51.8

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on March 28, 2001.

David W. Lynch

Name

Signature

CHANGE OF CORRESPONDENCE ADDRESS

Box AF  
Assistant Commissioner for Patents  
Washington D.C. 20231

Dear Sir:

Please change the Correspondence Address for the above-identified application to:

David W. Lynch  
Altera Law Group, LLC  
6500 City West Parkway - Suite 100  
Minneapolis, MN 55344-7701

The undersigned is the attorney of record for the above-identified application.

Respectfully submitted,

Altera Law Group, LLC  
6500 City West Parkway, Suite 100  
Minneapolis, Minnesota 55344-7701  
952-912-0539

Date: March 28, 2001

By:

David W. Lynch

Reg. No. 36,204

DWL/tmj

S/N 09/191,577

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	FREES ET AL.	Examiner:	Castro, A.
Serial No.:	09/191,577	Group Art Unit:	2652
Filed:	11/13/98	Docket No.:	SA998163
			501.117US01
Title:	MOUNTING INTERFACE FOR A SPINDLE MOTOR		

CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on March 28, 2001.

David W. Lynch

Name

Signature

RESPONSE UNDER 37 C.F.R. 1.116

Box AF  
Assistant Commissioner for Patents  
Washington, D.C. 20231

Dear Sir:

In response to the Office Action dated January 4, 2001, which was made final, Applicants request reconsideration of the rejection in view of the following remarks.

REMARKS

In response to the Office Action dated January 4, 2001, claims 1-51 are now pending in the case.

In paragraphs 1 and 2 on page two of the Office Action, claims 1-4, 6-8, 31, 33, 34, 36-38 and 46 were rejected under 35 U.S.C. §102(b) as being anticipated by Kirkwood. The Office Action stated that the claimed invention is taught by Kirkwood.

Applicants respectfully traverse these rejections. Applicants respectfully submit that the cited references, taken alone or in combination, do not disclose, teach or suggest the invention. Applicants respectfully submit that there are patentable differences between the cited references and Applicants' invention as recited in the claims.

Kirkwood fails to teach, disclose or suggest a mounting interface wherein positions of at least three surface points of the mounting interface are selected to reduce motor vibrations. Rather, Kirkwood discloses a vibration isolation system wherein the surface area common to a motor and a mounting surface is reduced in order to reduce the magnitude of motor vibrations.

In contrast, in Applicants' invention, the positions of the at least three surface points are specifically selected to affect a vibrational characteristic of the motor that thereby reduces motor vibrations.

In paragraphs 3 and 4 on pages three and four of the Office Action, claims 5, 16-23, 32 and 35 were rejected under 35 U.S.C. §103(a) as being unpatentable over Kirkwood.

The Office Action stated that as per claims 16-19, 21-23, Kirkwood discloses a mounting interface described supra. The Office Action also stated that Kirkwood does not disclose the data storage system comprising a storage medium, an actuator and a spindle motor for rotating the storage medium. The Office Action stated that one of ordinary skill in the art at the time the invention was made to incorporate the mounting

interface of Kirkwood into a data storage system comprising a storage medium and an actuator and a spindle motor for rotating the storage medium.

Applicants respectfully traverse these rejections. Applicants assert that combining Kirkwood and that which is allegedly "very well known" to produce a hypothetical structure or method that still lacks features in claim 1, as discussed above, does not constitute the basis for the rejection of claims under 35 U.S.C. 103(a). Applicants contend that reasonable doubt exists regarding the circumstances justifying the exercise of Official Notice, and requests that evidence be provided which demonstrates the appropriateness of the Officially Noticed facts, pursuant to MPEP § 2144.03. Applicants reserve the opportunity to respond to any Official comments concerning any such judicially noticed facts.

However, for the reasons given above, Applicants respectfully submit that the Kirkwood does not disclose, teach or suggest the invention. More specifically, as discussed above, Kirkwood does not disclose that the positions of the at least three surface points are specifically selected to affect a vibrational characteristic of the motor that thereby reduces motor vibrations. Still further, Applicants respectfully submit that Kirkwood does not suggest incorporating a mounting interface as recited in the claims into a data storage system comprising a storage medium and an actuator and a spindle motor for rotating the storage medium.

Therefore, in view of the above remarks, Applicants' claims 1 and 16 are patentable over Kirkwood.

Because claims 2-15 and 17-30 depend from independent claims 1 and 16, respectively, include the features recited in the independent claims as well as additional

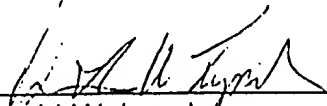
features, Applicants respectfully submit that claims 2-15 and 17-30 are also patentably distinct over the cited reference. Nevertheless, Applicants are not conceding the correctness of the Examiner's rejection with respect to such dependent claims and reserves the right to make additional arguments if necessary.

On the basis of the above amendments and remarks, it is respectfully submitted that the claims are in immediate condition for allowance. Accordingly, reconsideration of this application and its allowance are requested.

Respectfully submitted,

Altera Law Group, LLC  
6500 City West Parkway, Suite 100  
Minneapolis, Minnesota 55344-7701  
952-912-0539

Date: March 28, 2001

By:   
David W. Lynch/  
Reg. No. 36,204

DWL/wmf/tmj

# Appendix E

APR - 9 2001



UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

09/191,577 11/13/98 FREES

G SA998163/305

501-117-US-d

WM02/0404

EXAMINER

CASTRO, A

DAVID W. LYNCH  
ALTERA LAW GROUP, LLC  
6500 CITY WEST PARKWAY, SUITE 100  
MINNEAPOLIS MN 55344

ART UNIT

PAPER NUMBER

2652

DATE MAILED:

04/04/01

AA-rvd - 4 Month FR 04 May 01

AA-rvd - 6 Month FR DUE 04 Jul 01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

NO CROSS REF.



APR -9 2001

**Advisory Action**Application No.  
09/191,577

Applicant(s)

Gregory M. FREES et al

Examiner

Angel Castro

Group Art Unit

2652



## THE PERIOD FOR RESPONSE: [check only a) or b)]

a) ☒ expires 3 months from the mailing date of the final rejection.b) ☐ expires either three months from the mailing date of the final rejection, or on the mailing date of this Advisory Action, whichever is later. In no event, however, will the statutory period for the response expire later than six months from the date of the final rejection.

Any extension of time must be obtained by filing a petition under 37 CFR 1.136(a), the proposed response and the appropriate fee. The date on which the response, the petition, and the fee have been filed is the date of the response and also the date for the purposes of determining the period of extension and the corresponding amount of the fee. Any extension fee pursuant to 37 CFR 1.17 will be calculated from the date of the originally set shortened statutory period for response or as set forth in b) above.

☐ Appellant's Brief is due two months from the date of the Notice of Appeal filed on \_\_\_\_\_ (or within any period for response set forth above, whichever is later). See 37 CFR 1.191(d) and 37 CFR 1.192(a).

Applicant's response to the final rejection, filed on Mar 30, 2001 has been considered with the following effect, but is NOT deemed to place the application in condition for allowance:

☐ The proposed amendment(s):

☐ will be entered upon filing of a Notice of Appeal and an Appeal Brief.

☐ will not be entered because:

☐ they raise new issues that would require further consideration and/or search. (See note below).

☐ they raise the issue of new matter. (See note below).

☐ they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal.

☐ they present additional claims without cancelling a corresponding number of finally rejected claims.

NOTE:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

☐ Applicant's response has overcome the following rejection(s):

\_\_\_\_\_  
\_\_\_\_\_

☐ Newly proposed or amended claims \_\_\_\_\_ would be allowable if submitted in a separate, timely filed amendment cancelling the non-allowable claims.

☒ The affidavit, exhibit or request for reconsideration has been considered but does NOT place the application in condition for allowance because:

The position of record has been maintained

☐ The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.

☒ For purposes of Appeal, the status of the claims is as follows (see attached written explanation, if any):

Claims allowed: None

Claims objected to: None

Claims rejected: 1-51

☐ The proposed drawing correction filed on \_\_\_\_\_ ☐ has ☐ has not been approved by the Examiner.

☐ Note the attached Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☐ Other

BRIAN E. MILLER  
PRIMARY EXAMINER

# A Brief Summary of Some Significant Rule Changes

\*Unless otherwise specified in the rule, the effective date for the **PBG-FINAL RULE** is November 7, 2000.

## Amendment Practice (37 CFR 1.121)

- Specification/Claims
    - Amendment by paragraph replacement or rewritten claim in clean form
    - Marked-up version showing changes must be supplied
- See § 1.121 Slides on **PBG-FINAL RULE** Webpage for suggested amendment **FORMAT** (Optional now, mandatory March 1, 2001)

## Small Entity Status (37 CFR 1.27) - **FORMS NO LONGER REQUIRED** (Eff. Sept. 8, 2000)

- Mere written assertion (e.g., use check box on Application Transmittal Forms) is acceptable

## Abstract and Title Length (37 CFR 1.72)

- **Abstract** now limited to 150 words (PBG)
- **Title** now limited to 500 characters (AIPA)

## Application Data Sheet (ADS) (37 CFR 1.76) **NEW**

- Use of ADS encouraged for more accurate capture of bibliographic data. Data in ADS not needed in declaration

## After Allowance Practice (37 CFR 1.85(c) and 1.136)

- No extensions of time permitted to file corrected or formal drawings

## Elimination of Issue Fee Preauthorizations (37 CFR 1.311)

- Preauthorizations prior to Notice of Allowance no longer permitted

## Rocket Docket Established for Designs (37 CFR 1.155)

- Extra submissions plus \$900 fee is required

## Proof of Authority of Legal Representative (37 CFR 1.44) **THIS RULE HAS BEEN DELETED.** (Eff. Sept. 8, 2000)

- Oath/Dec. (§1.63) should identify legal rep for deceased/incapacitated inventor

## Parts of Applications on CD-R or CD-ROM (37 CFR 1.52 (e), 1.58, 1.96 & 1.821)

- Large tables, computer program listings, and bio-sequences now allowed on CD

# Patent Business Goals Final Rule

65 Fed. Reg. 54604 (September 8, 2000)

1238 Off. Gaz. Pat. Office 77 (September 19, 2000)



**USPTO's PBG-FINAL RULE**  
webpage has helpful related  
information at one location:  
[http://www.uspto.gov/web/offices/  
dcom/olia/pbg/index.html](http://www.uspto.gov/web/offices/dcom/olia/pbg/index.html)

**This site includes:**  
• a Listing of Affected Rules,  
• Training & Implementation  
• Materials including Training  
• Slides, Q & A's, Summaries,  
• Effective Date Chart, Forms  
• Changed by Recent Rules, etc.

### Contact:

Bob Spar (703) 308-5107 or  
Hiram Bernstein (703) 305-8713  
for any PBG Change

Joe Narcavage (703) 305-1795  
for 37 CFR 1.121  
Amendment Practice Changes

Eugenia Jones (703) 306-5586  
for 37 CFR 1.27 Small Entity  
Changes

# Appendix F



UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

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Washington, D.C. 20231

MF

MF

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/191,577	11/13/98	FREES	G 501117-US-01 SA998163/305

EXAMINER
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DAVID W. LYNCH  
ALTERA LAW GROUP, LLC  
6500 CITY WEST PARKWAY,  
MINNEAPOLIS MN 55344

WM01/0419

CASTRO, A	
ART UNIT	PAPER NUMBER

2652

DATE MAILED:

04/19/01

RECEIVED

APR 23 2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

no docketing  
2-Mat Oppy  
MF v13

# Interview Summary

Application No.  
09/191,577

Applicant(s)  
Gregory M. FREES et al

Examiner  
Angel Castro

Group Art Unit  
2652



All participants (applicant, applicant's representative, PTO personnel):

(1) Angel Castro

(3) Brian Miller (Primary Examiner)

(2) David W. Lynch (Applicant's Representative)

(4) \_\_\_\_\_

Date of Interview Apr 18, 2001

Type: a) ☒ Telephonic b) ☐ Video Conference  
c) ☐ Personal (copy is given to 1) ☐ applicant 2) ☐ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☒ No. If yes, brief description:

Claim(s) discussed: 1

Identification of prior art discussed:  
Kirkwood (U.S. Pat. 6,045,112)

Agreement with respect to the claims f) ☐ was reached. g) ☒ was not reached. h) ☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments:

Applicant's representative reiterated that Kirkwood fails to teach the selection of the position of the surface points to affect the vibrational characteristic of the motor; the Examiner maintained that Kirkwood teaches the invention as claimed, therefore the position of record is maintained.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

i) ☒ It is not necessary for applicant to provide a separate record of the substance of the interview (if box is checked).

Unless the paragraph above has been checked, THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached

BRIAN E. MILLER  
PRIMARY EXAMINER

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.



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<http://www.uspto.gov/web/offices/dcom/olla/pbg/index.html>

This site includes:

- a Listing of Affected Rules
- Training & Implementation Materials including Training Slides, Q & A's, Summaries, Effective Date Chart, Forms Changed by Recent Rules, etc.

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Hiram Bernstein (703) 305-8713  
for any PBG Change

Joe Narcavage (703) 305-1795  
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Amendment Practice Changes

Eugenia Jones (703) 306-5586  
for 37 CFR 1.27 Small Entity  
Changes

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